TECHNOLOGY DEPT.

Gas Journal

Vol. 263. 102nd Year. LONDON, AUGUST 30, 1950. No. 4552. Price 1/-

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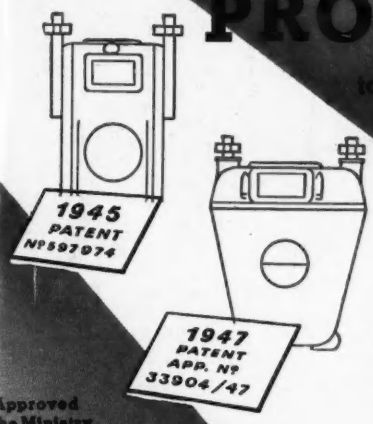

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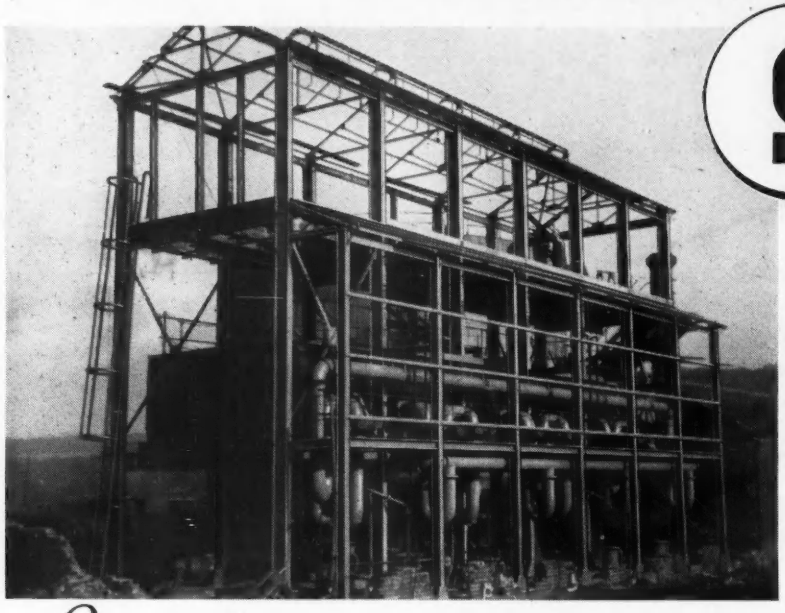

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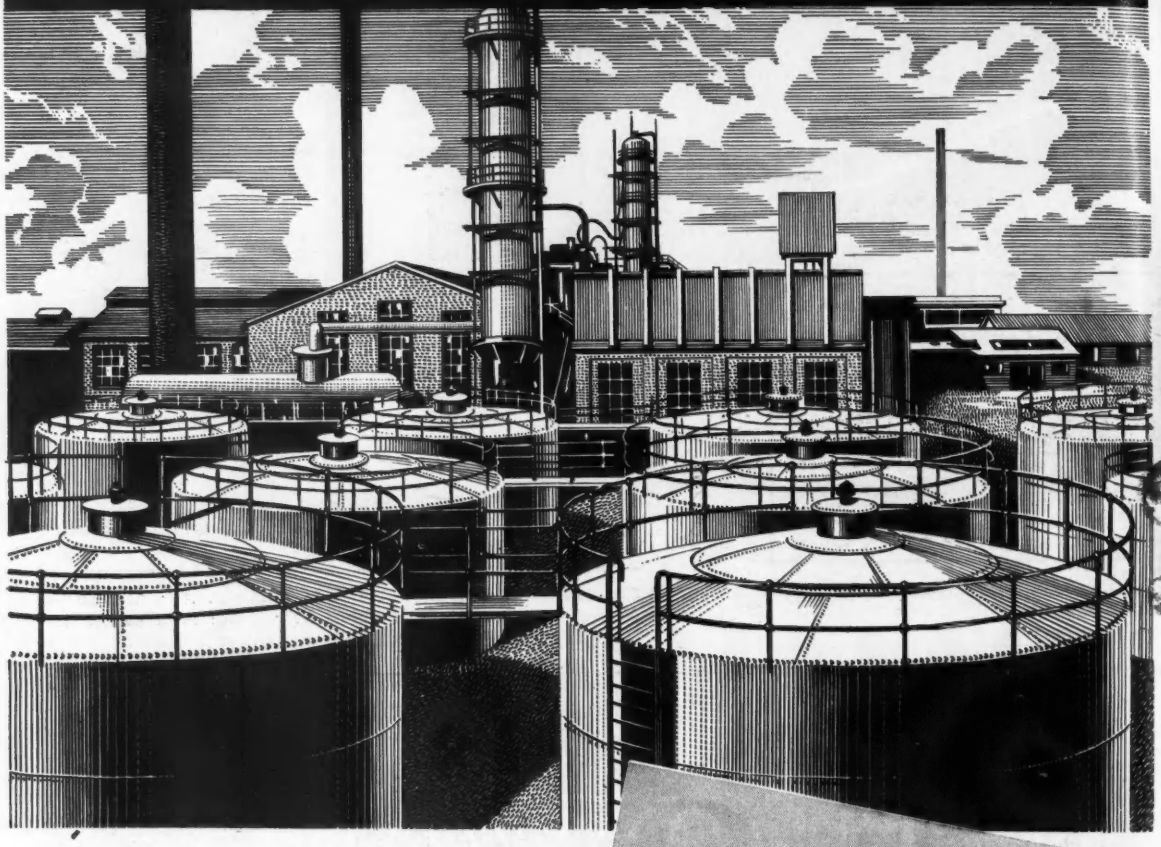

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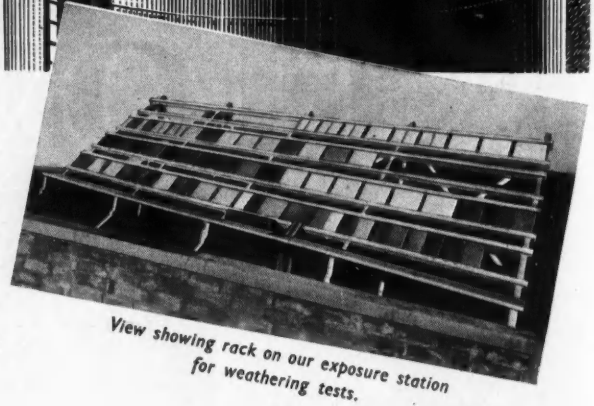

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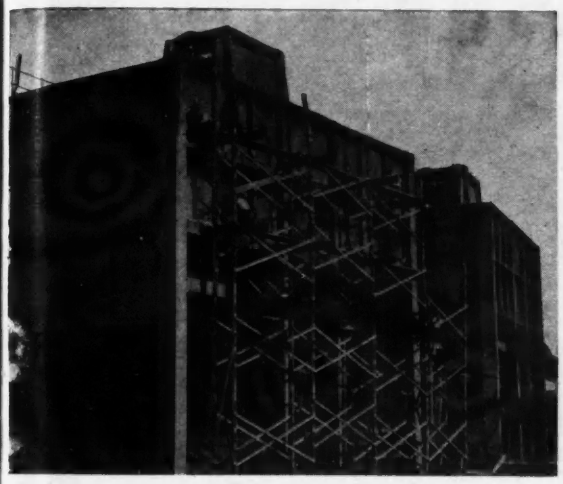

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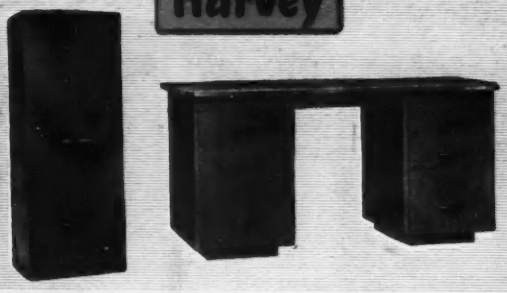
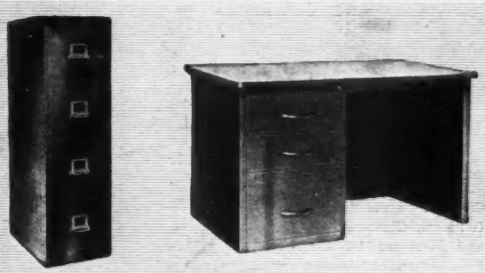
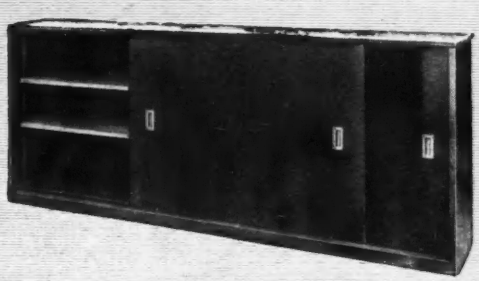


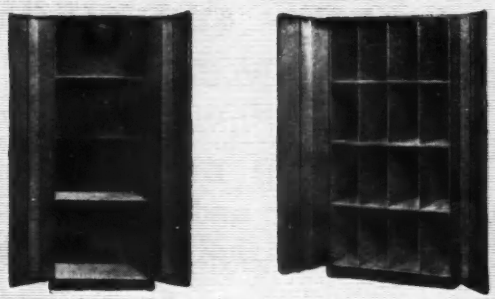
STEEL CUPBOARDS AND DOUBLE PEDESTAL STEEL DESKS.



STEEL FILING CABINETS AND STEEL TYPISTS TABLES.



STEEL CUPBOARDS WITH SLIDING DOORS.



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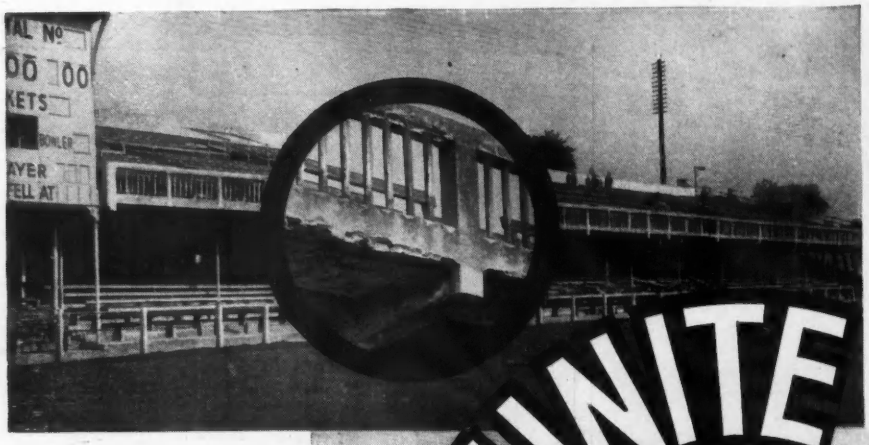

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Estimates given for encasing structural steelwork and covering the wearing surface of chutes and bunkers.

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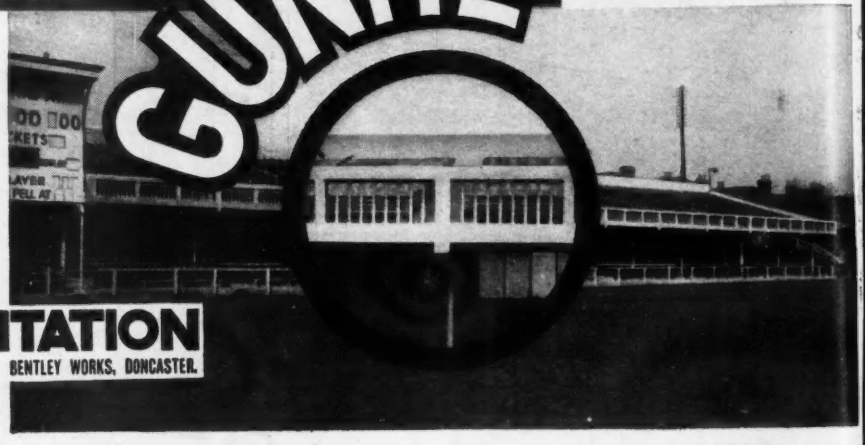

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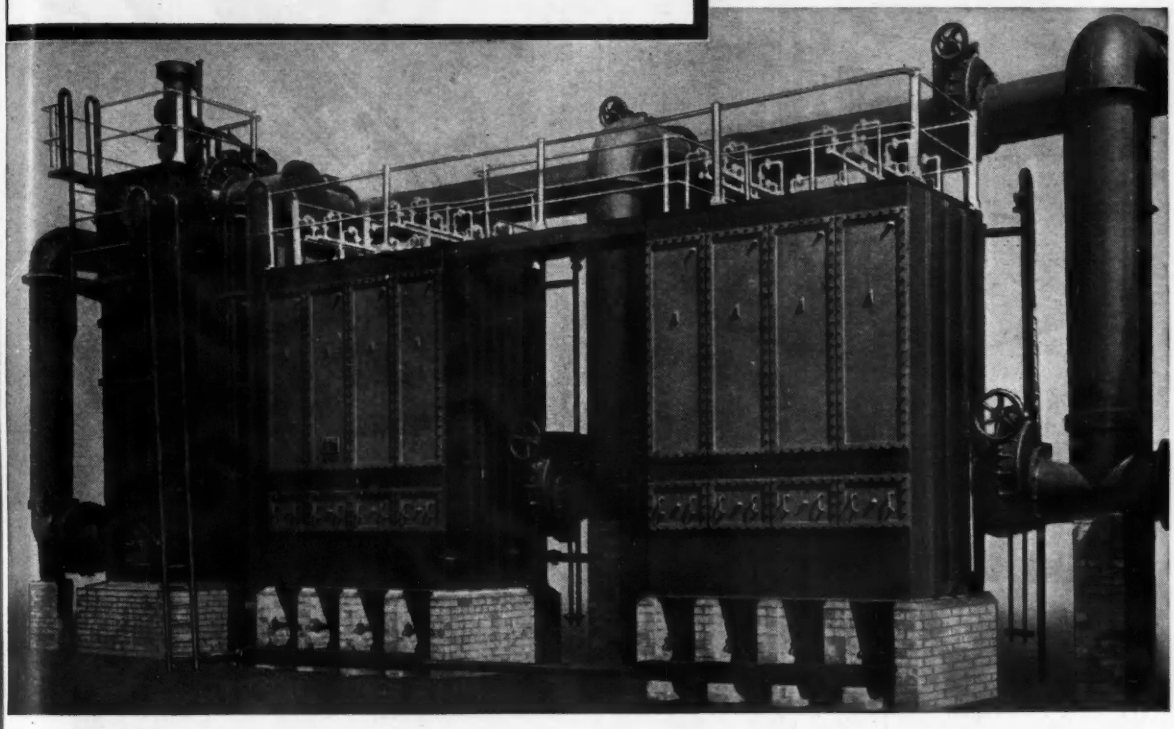

The photograph shows the neat arrangement of a W.W–D. Electro-detarrer and a Whessoe Multi-stage Static Ammonia Scrubber, with capacities of 4 million cu. ft. of gas per day, installed at the Darlington Works of the Northern Gas Board.

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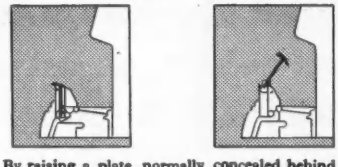

By raising a plate, normally concealed behind the fire front, the capacity of the grate is increased sufficiently to maintain a slow-burning fire throughout the night.

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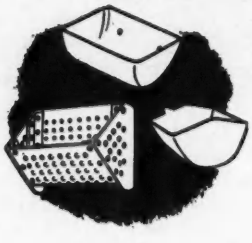

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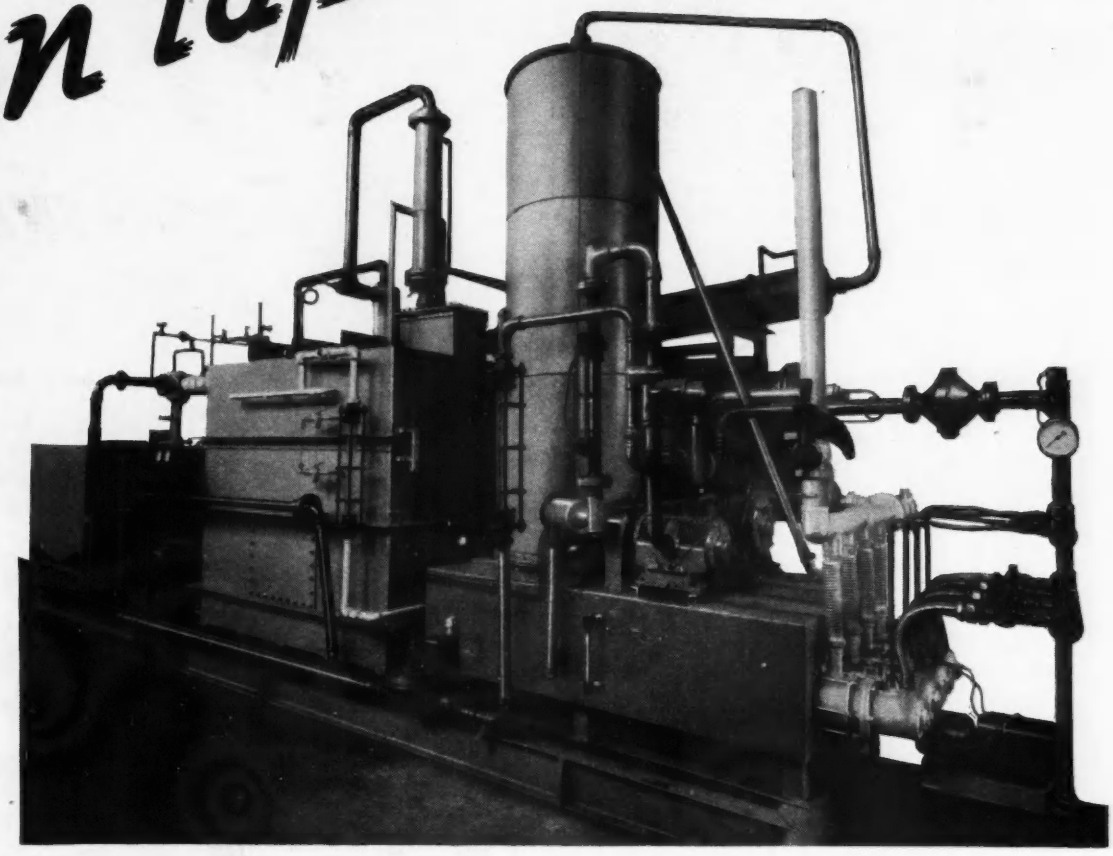

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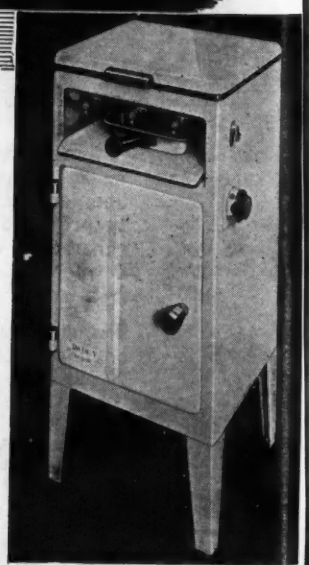
Small kitchens and flats

The **Dainty** MINOR



This efficient little cooker of large capacity is made especially for small kitchens and flats.

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For hire purchase or for simple hire the Dainty Minor is ideal.

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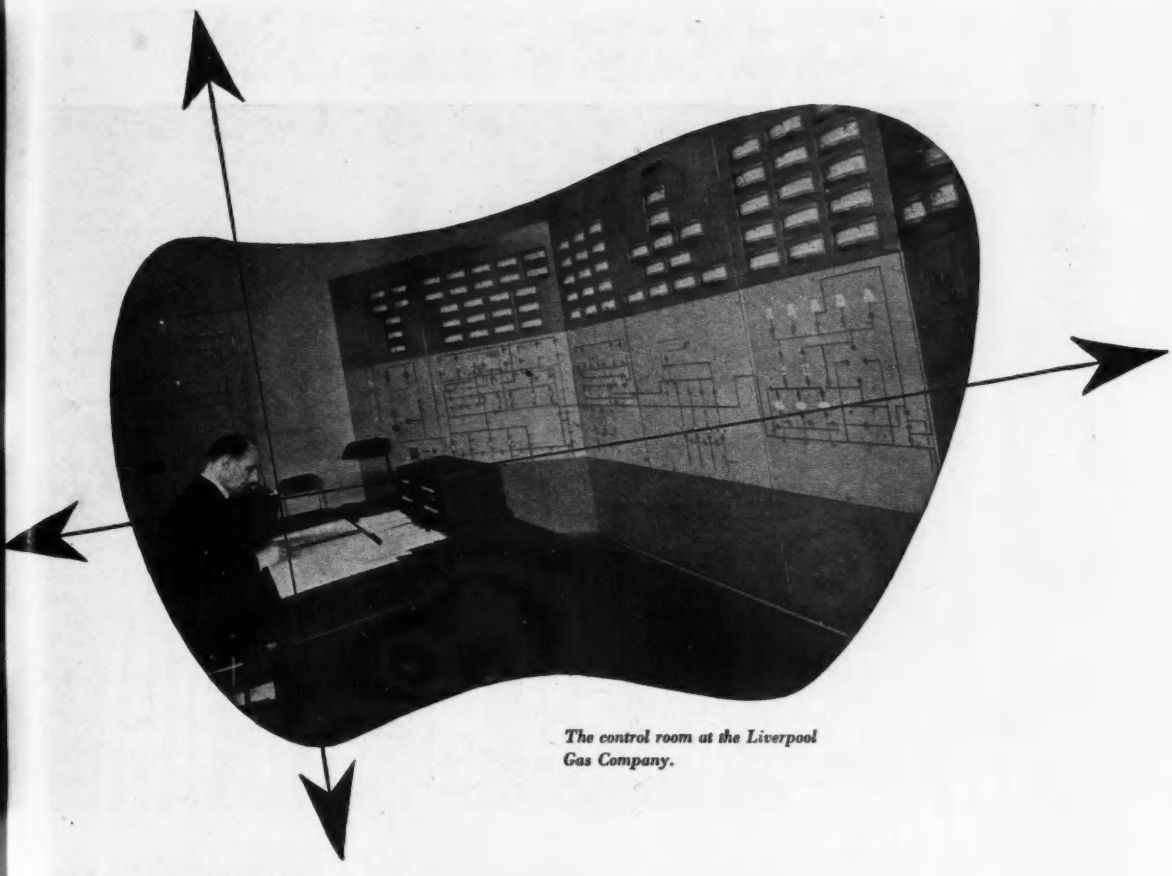

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Physically he cannot but in the sense of SUPERVISORY CONTROL he can be *omnipresent.* At his hands a few switches, before his eyes an all-revealing diagram that gives an instant and accurate picture of all conditions.

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A.T.M. Remote Control equipment has the great advantage of requiring only two telephone wires to operate a multiplicity of control circuits. It is already widely adopted by railway, gas, electricity, water supply and similar undertakings in many parts of the world and is adaptable to many industrial concerns where operations are dispersed over a widespread area.

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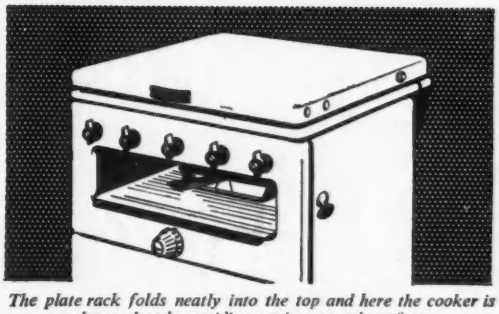
Above you see the folding cover-top raised and firmly in position for cooking. Note that it is spacious enough for all needs and is fully equipped with plate rack.



The plate rack folds neatly into the top and here the cooker is shown closed, providing a trim, smooth surface.

Now — 7 reasons why this cooker tops the lists

1 Blonde or Black Top. Each cooker can be fitted with the familiar two-piece semi-solid black enamelled type of hotplate, or the new type hotplate in light-toned enamel like the rest of the cooker.

2 High Speed Boiling Burners easily removed for cleaning.

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7 Optional Folding Cover-Top as illustrated. Or the cooker can be had with the conventional fixed back plate, both types with dish rack.

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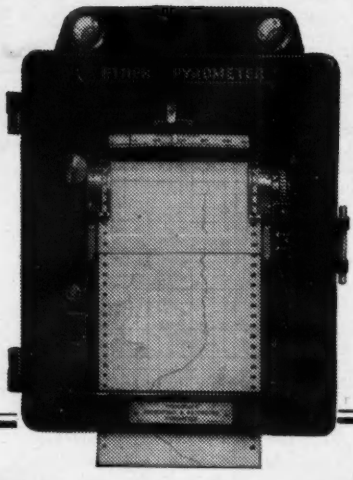

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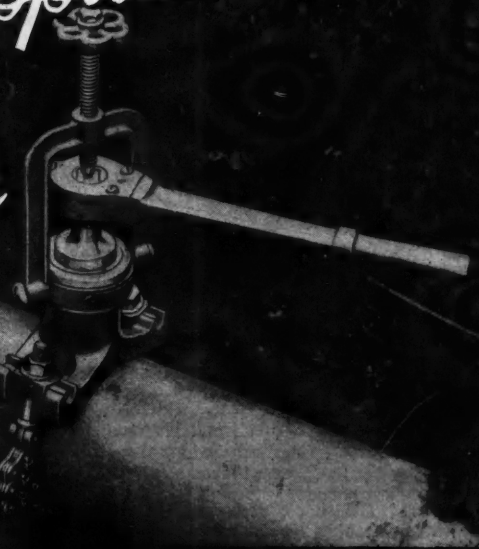

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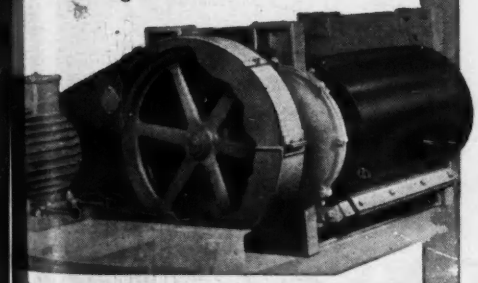

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Spur gearing runs in oil.
Lubrication looks after itself for months.
Cambered driving drum keeps belt central.
Belt is gently cleaned after emptying.
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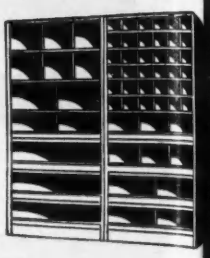

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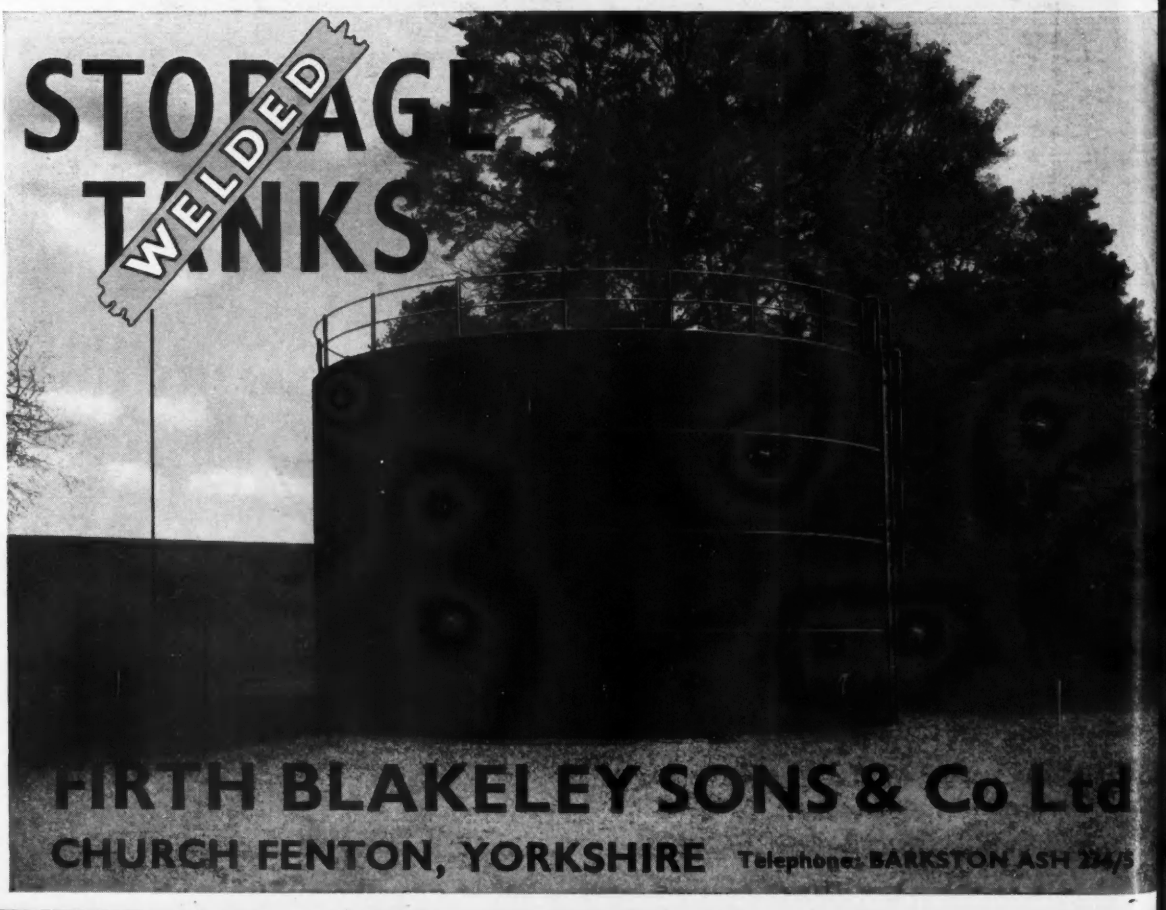

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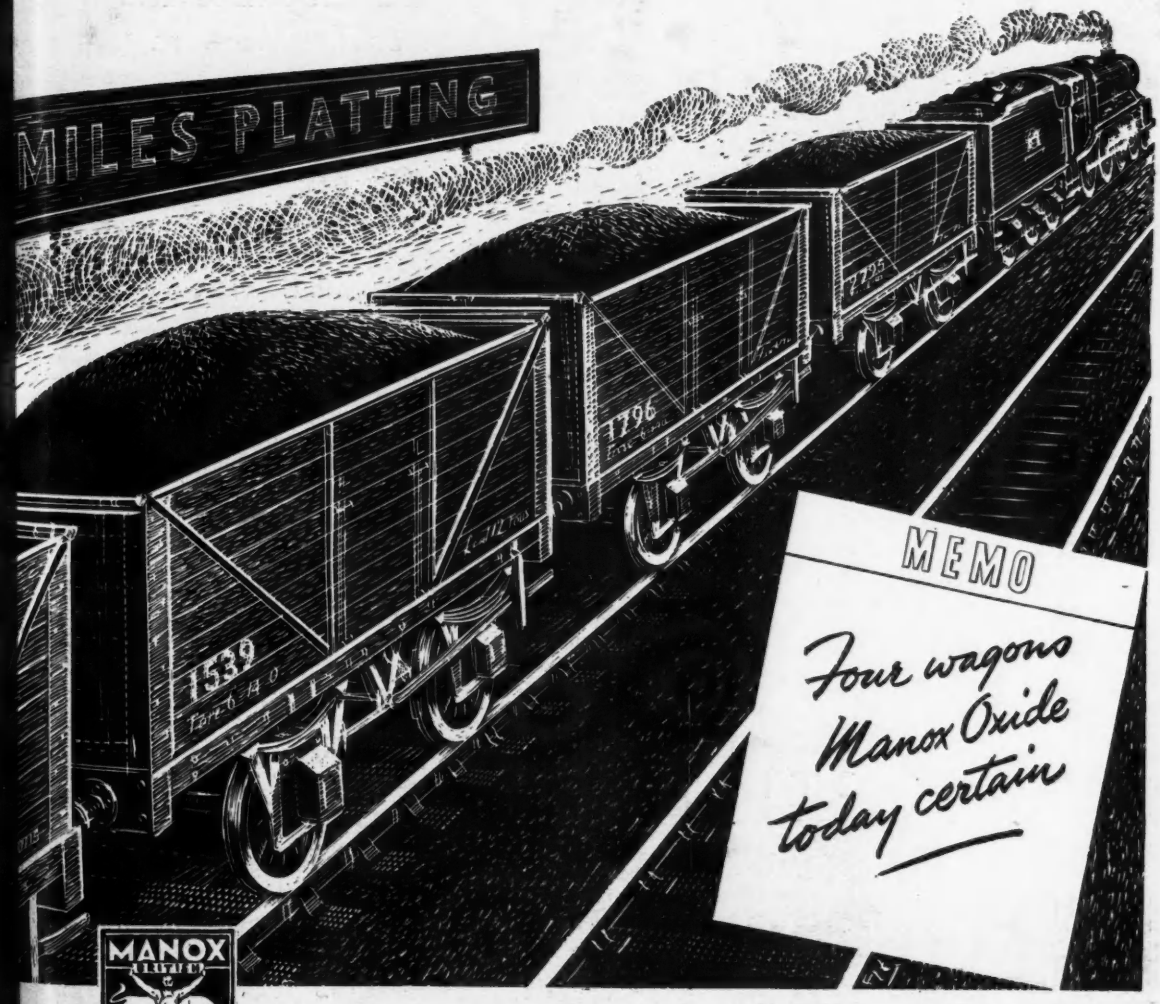

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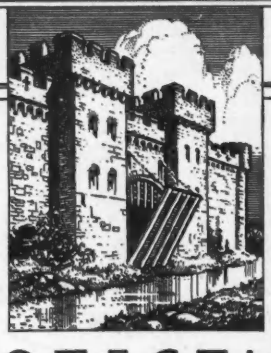

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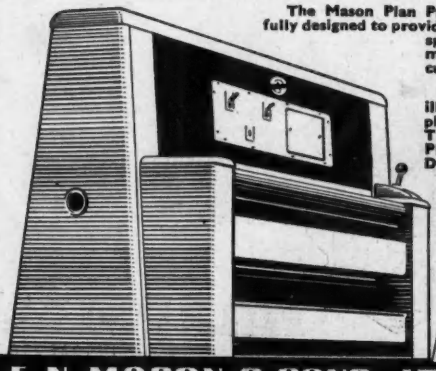

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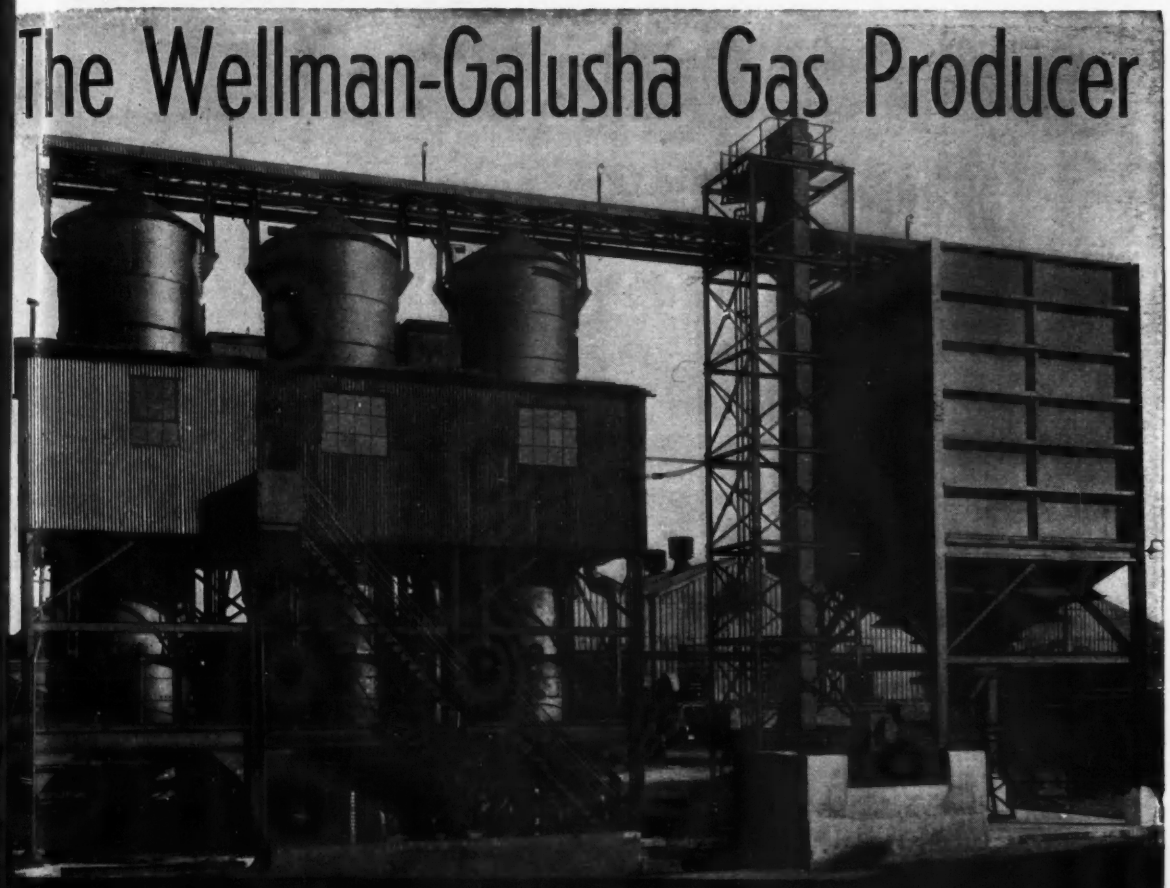

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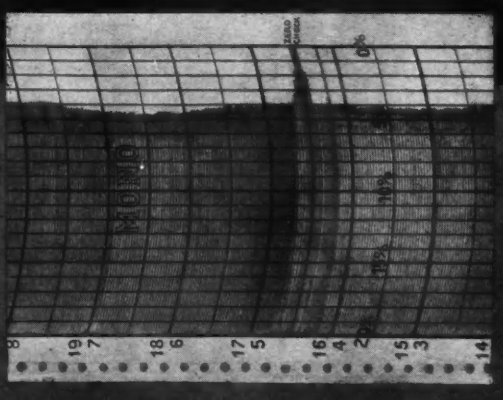

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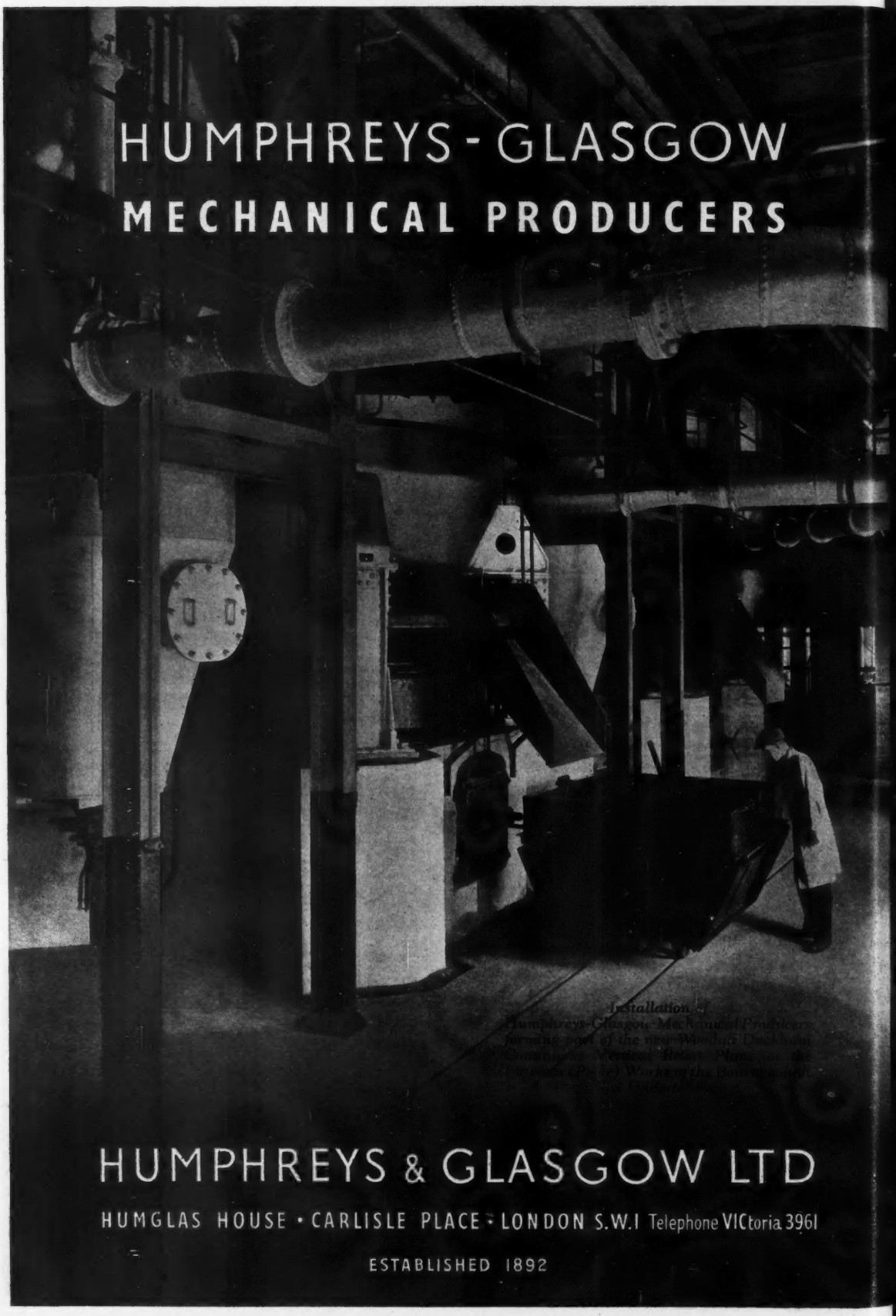
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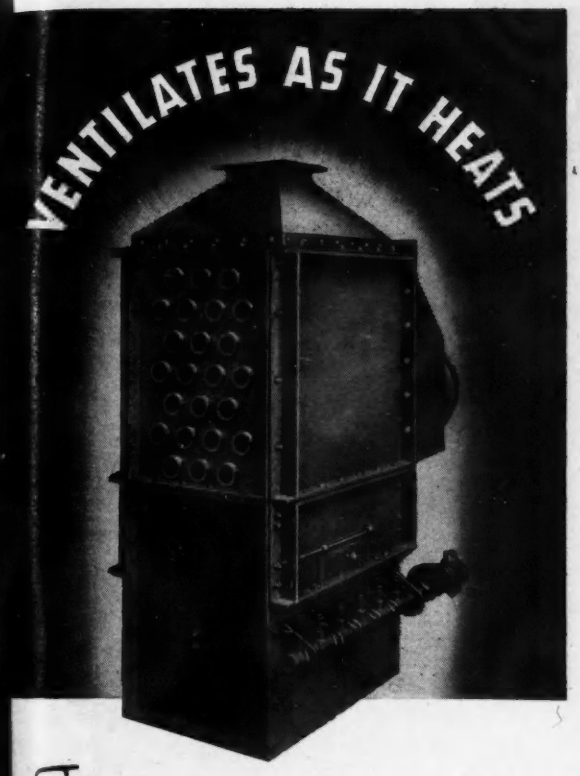

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102nd YEAR OF PUBLICATION

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VOL. 263 NO. 4552 AUGUST 30, 1950

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The dispute between the London Society of Compositors and the London Master Printers' Association continues, and no overtime is being worked. As a result, there has been no alternative but to reduce temporarily the number of pages of the Gas Journal. *Within the enforced smaller compass we are doing all possible to maintain the* Journal *news and technical service, though abbreviation is inevitable till the dispute is settled. In the difficult circumstances we ask subscribers' indulgence.*

Publishers' Notice : See page S3, August 23

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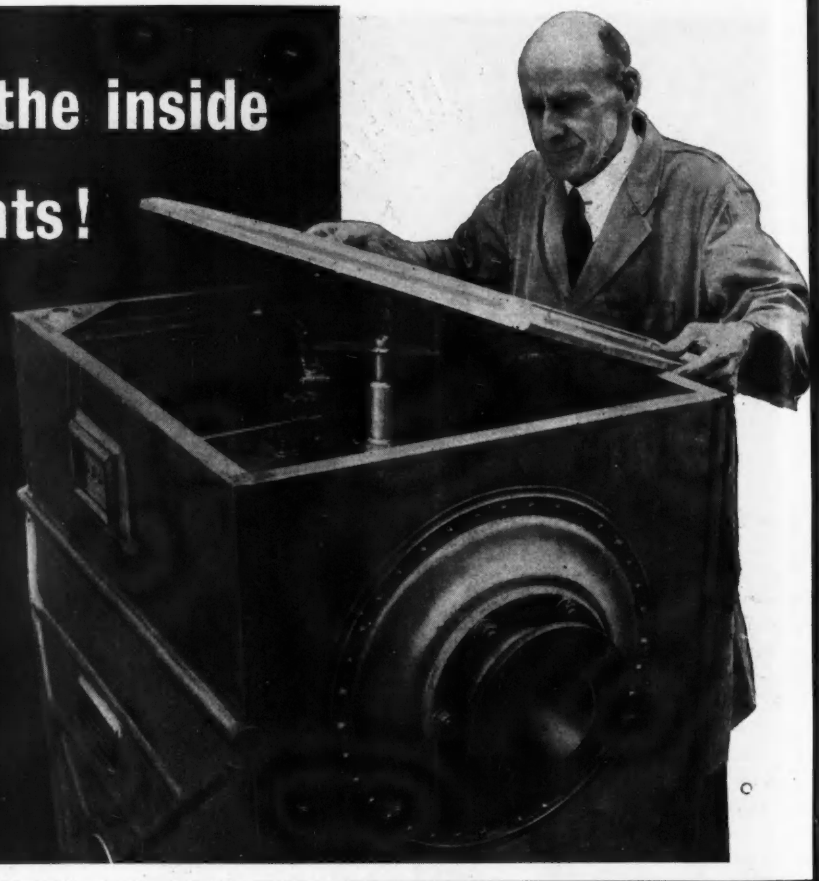

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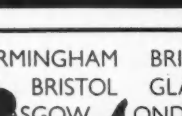

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GAS JOURNAL

VOL. 263. No. 4552 102ND YEAR AUGUST 30, 1950

TAR AND AMMONIA

INCREASING concentration of tar distillation in fewer and larger works is recorded in the reports of the Chief Inspectors (both for England and Wales and for Scotland) under the Alkali, &c., Works Act covering the year 1949. A decrease of 14 in the total number of works in England and Wales relates mainly to sulphate of ammonia, tar, and benzene works, and in Scotland one large continuous still takes the place of three small distillation works closed down. Mr. W. A. Damon welcomes the trend towards the use of large central works and the replacement of discontinuous pot stills by continuous units of much greater throughput because small units are likely to cause more offence in proportion to their throughput than are large ones. Dealing with gas liquor works he notes that the newly-formed gas boards are giving much consideration to gasworks effluents and are contemplating a number of new concentration plants chiefly in order to avoid the discharge of raw ammoniacal liquor. From the standpoint of the Alkali, &c., Works Act, the gas industry is part of the chemical industry, in which it is anticipated that high rates of production will be at least maintained during the current year. The supply of most maintenance materials has improved, says the report, although there is still a shortage in certain directions. A number of new works involving registrable processes are in course of building and some were brought into operation during the year. In connection with these there was consultation with the Ministry of Town and Country Planning and with local interests to determine the conditions calculated best to reduce loss of amenities to a minimum.

The Chief Inspector for Scotland refers again to the increasing tendency to waste gasworks by-product ammonia by discharge to water-courses, resulting in pollution, and gives a fair summing-up of the circumstances in which the operation of small units for the manufacture of sulphate of ammonia has become uneconomic. Paradoxically, world demand for sulphate of ammonia has increased and the wasted ammonia is replaced by synthetic ammonia with the consumption of more coal. In conjunction with the Chemical Sub-Committee of the Scottish Council (Development and Industry) investigation is being made into the possibility of finding uses for the by-product ammonia which is being wasted. Since the Industrial Productivity Committee under Sir Henry Tizard has stressed the need for more nitrogen fertiliser for grasslands, the first line of investigation has been directed towards the possibility of using by-product ammonia either directly as a fertiliser or in combination with other fertilisers.

ENERGY CAPITAL AND INCOME

ON Thursday of last week a lecture of wide general interest was given by Dr. A. Parker, Director of Fuel Research, D.S.I.R., at the Midland Institute, Birmingham, in connection with the meeting of the British Association for the Advancement of Science. Dr. Parker took as his subject 'Man's Use of Solar Energy,' and he discussed this energy, bringing forward for his purpose a formidable array of statistics, in terms of capital and income. He assessed the 'capital'—the store of terrestrial heat derived from the sun—as equivalent to the combustion of 500 trillion tons of coal. On this we will not argue with Dr. Parker about decimal points. Of the known resources of fossil fuels, he said, which are equivalent to 6 million million tons of coal, 97% occurs as coal and lignite, 1% as peat, and less than 1% as petroleum and oil-bearing shale. At present rates of production the coal and lignite which can be produced economically are sufficient for the world as a whole for 2,000 years—but only if we avoid all unnecessary waste. So we must be very careful and have proper regard for the year 3951 A.D. We may assume, however, that further scientific knowledge will become available during this brief span of 2,000 years, and that at least some of it will be applied in the fuel field. That is the world picture. Dr. Parker stated that known reserves that can be won economically will provide coal at the present rate in Great Britain for only 200 or 300 years. Our indigenous petroleum would meet our needs for only two or three weeks.

Turning to energy 'income,' Dr. Parker produced further semi-astronomical figures. Income of energy being received by the earth from the sun (after allowing for that radiated back into space) he put as equivalent to the energy of combustion of 17 million million tons of coal a year, or, 8,000 times the heat of combustion of the world's annual production of coal and petroleum at the present time. The food consumed by the world's population has

an energy value equal to more than 300 mill. tons of coal a year. Fortunately, the food is more palatable than the current supply of coal. Wood used as fuel is equivalent to 200 mill. tons of coal a year. The coal equivalent of all energy resources—capital and income—being harnessed and used by man to meet his needs is about 3,200 mill. tons.

On these bases Dr. Parker indulged in further calculations, even touching on the servant problem. The energy harnessed to assist man to run his comic course is about 1.5 tons of coal per person per year for the world as a whole. In the United States of America it is more than 8 tons per person. In Great Britain it is about 4 tons. After allowing for fuels used for heating, Dr. Parker stated that the power used in the U.S.A. corresponds with providing every inhabitant of that country with the manual labour of more than 30 servants. He put the figure for Great Britain as 13 or 14 servants. We are indeed fortunate, and the piquant conclusion calls for further speculation. It would seem that one servant is the equivalent of (very roughly) 20 therms; and it would be a fascinating study to grade 'domestics' from Ireland, Wales, and the North of England, for instance, according to their heat value. We ourselves fall into the non-domestic-help class, and we dissipate in household tasks much of the energy equivalent of our 13 or 14 hypothetical domestic helps.

SUBTERRANEAN POWER

WE still know very little about the constitution and condition of the interior of the globe on which we live. Our direct knowledge of the earth's crust is confined to a depth of some five miles out of the 4,000 which separate us from the centre. But all the evidence points to the probability that within a comparatively short distance from the surface high temperatures prevail. It is inevitable that longing eyes should be turned to this possible source from which to supplement our dwindling supplies of fuel, and that attention should first be directed to those regions where volcanic action reveals high temperatures at or near the surface.

Signor Mario Ungaro in the paper he presented to the recent World Power Conference mentioned a very interesting example of the use which is already being made of these subterranean stores of energy. At Larderello in Tuscany, steam issuing from the nether regions is being utilised for the generation of electricity. This steam has been exploited for a long time for the extraction of the boric acid which it contains and the first attempts to obtain mechanical power from it date back to 1894. Since then progress in this direction has been made. By 1930 steam turbines had been installed with a capacity of 14,770 kW and the annual production of electricity exceeded 50 mill. kWh. In 1938 these geothermic power stations had acquired a considerable importance. Installed capacity reached 135,800 kW in 1943 and the annual output rose to 900 mill. units. After complete destruction during the war these stations have been reconstructed and at the end of 1948 installed capacity was 150,500 kW distributed among five stations in 17 groups. Of the latter, 11, of 12,000 kW each, are actuated by condensing turbines fed by subterranean steam by way of heat interchangers. In 1949 production reached nearly 1,000 mill. units forming a considerable proportion of the electric supply of the country.

It is impossible to foresee, yet, exactly what are the ultimate geothermic resources in the Larderello zone. At the moment, a new station is under construction, in which will be installed four groups each of 26,000 kW actuated by condensing turbines fed direct by the subterranean steam, while another station is projected with six groups of similar capacity. This section of the paper concluded with the significant remark that in other Italian regions, too, the utilisation of steam and of hot water associated with volcanic phenomena is being studied.

TRANSATLANTIC CONTRASTS

NOTHING is more difficult than the comparison of things American with those in this country. In film and printed word our transatlantic friends surround themselves with an aura that makes accurate remote control assessment a matter of suspicious 'reading between the lines.' Moreover—and this is not quite the same thing—the Americans are such master publicists that the featuring of certain subjects tends to obscure the many others less worthy of mention. These thoughts are prompted by our customary examination of U.S. gas industry magazines which always provide interest and entertainment.

Judged by the reports published in these journals, American gas publicity is more energetic and has greater recourse to stunts than our own. On the other hand, there is none of the national co-ordination which makes our united front so potent a feature of British gas salesmanship. However, one must be impressed by the all-gas cooking school sponsored by the United Fuel Gas Company of Charleston, W. Va. Held in the municipal auditorium, the stage display consisted of a two-tier background 38 ft. long and 11 ft. high, on which 18 ranges were shown in addition to other appliances. Radio and newspaper build-ups heralded the three-day school which was attended by more than 6,000 people. Another news item concerns a new entertainment introduced recently by the Philadelphia Gas Works Company. Billed as 'television's newest and most interesting daytime show for the ladies,' the programme includes chefs, *maitres d'hotel*, prominent guests, musicians and tiny tots. This sort of thing rings strangely in British ears, but it is difficult to regard such obviously virile private enterprise without a little envy.

Certainly our American friends aim high. An editorial note in *Gas Age* remarks that no gas range should remain in use longer than ten years, thereby giving a continuing replacement market of 2,700,000 gas ranges a year, without catching up on the backlog. Adding at least 800,000 ranges for installation in new homes each year, this makes a total of 3,500,000, still without catching up on the backlog of 11 mill. ranges made obsolete by more than a decade of use. It is suggested that these should be 'knocked off' at the rate of at least a million every year. 'The American people,' states the leader, 'seem to have plenty of ready cash or easily available credit to buy almost everything they *want*. They *need* modern gas

ranges. Complacently accepting orders for gas ranges from 10% of our customers means 2,500,000 range sales a year. Well-planned local advertising, promotion, and door bell ringing can create sales of better gas ranges to 20% of our customers.' Five million is therefore suggested as the target per year. This must be related to the figure of 27 mill. homes in the United States and Canada using gas for cooking.

All this provides an interesting comparison and, surely, a feeling of depression. Because now, just when British salesmanship, so long in enforced hibernation, is waking up to the needs and possibilities of the future, the rearmament programme casts a long shadow across future plans. The flow of domestic appliances has only just become sufficient to enable our sales forces to go into action; now the probable switch of labour and materials to Service requirements threatens to restrict that flow. A disappointing prospect, and one which Americans are not likely at once to appreciate.

COAL PRODUCTION AND PROFIT

On Friday last the National Coal Board published its statistical statement of the costs of production, proceeds, and profit or loss of collieries for the first quarter of 1950. It is estimated that the board's surplus on revenue account for the quarter amounted to approximately £5,600,000. The tonnage disposable commercially (this includes coal transferred from collieries to coke ovens) was 48,450,960 tons (mine consumption 2,726,783 tons; miners' coal 1,401,881 tons). Costs of production per ton amounted to 44s. 5.5d. (wages 29s.) and proceeds to 48s. 2.9d. per ton; profit 3s. 9.4d. The estimated average earnings, including the value of allowances in kind, for all adult male workers, 21 years of age and over, amounted to £9 15s. 4d. per week. Average earnings of underground workers were £10 and of surface workers £7 4s.

A CIRCLE MISCELLANY

It is interesting to speculate on how much the gas industry's progress would be retarded without the contribution made by its various technical associations—contributions made at all levels and in all fields of gas manufacture, distribution, and sales. It might be thought that the sphere of selling offered less material for discussion. Judged by the activities of the Gas Salesmen's Circles the reverse is the case (or perhaps it is in the nature of salesmen to enlarge upon things somewhat). A good deal of this material is repetitive, for there are always new members and those who have not heard it before. Moreover, there are some things which cannot be said too often. But rising from these Circle meetings all over the country are bubbles of new thought, new suggestions, new conceptions—the very champagne with which new ideas in salesmanship are launched. On later pages of our issue to-day, under the title 'Current Thought on the Service Side,' we present a review of the major items discussed during recent months at meetings of Gas Salesmen's Circles. Our review indicates clearly enough that the Circles are energetic, ambitious, and in no doubt of their responsibilities in the changing light of competitive selling.

WEST MIDLANDS PRICES

Probably about half the gas consumers in the West Midlands who are faced with an immediate price increase of three-farthings per therm will blame nationalisation for the rise. To attempt a political appraisal of the position would be futile. The simple fact is that, in common with all other area boards, the West Midlands Gas Board must raise additional revenue of the order of £700,000 a year to equate income with outgoings. Economies of many thousands of pounds a year which have been effected since vesting day have been swamped by increases in costs over which the board has no control—coal prices, freight charges, petrol tax, gas oil, and the rest. Had these increases come while the industry was still in private and municipal hands the directors and committees would have had to find ways and means of meeting them. Some might have cushioned the impact by drawing on reserves; others might have economised on service. The only difference today is that the area boards, being obliged by the Gas Act to ensure that their revenue will, taking one year with another, be not less than sufficient to balance expenditure, are making a realistic approach to a very unpleasant task and are spreading the burden as fairly as they deem possible. Consumers in general may well envy those in the few places where no immediate increases are proposed, but who may in fact already be paying a higher price, and those in places where owing to special factors and/or to the uneconomic prices at present prevailing, the increase is greater than the average, may envy the others, but on the whole, the price revisions announced by Mr. G. le B. Diamond will cost the average consumer not more than about 2d. per week extra.

A BURNING QUESTION

Last winter was mercifully mild. Fuel stocks were low, but at no period did they reach crisis proportions. The chances of an equally mild winter this year are somewhat less and home demands for coal are rising at a remarkable rate. As a result the coal mining industry is being asked to speed up production a month earlier than in previous years. This is revealed by a letter on behalf of the coal industry's National Consultative Council to divisional chairmen, in which Lord Hyndley, Chairman of the National Coal Board, has asked that the autumn drive should begin 'by mid-September at the latest.' He urged that production be increased wherever possible to make up for the resources which must be devoted to defence. 'The industry of the country,' stated the letter, 'is running at a pressure never before experienced and the demand for coal from factories, power stations, gasworks, and the railways, combined with that from the domestic consumer, is rising steadily. It is now every week nearly equal to what we are producing. There is little left over to meet overseas demand and to stock up for the winter.' In view of this almost permanent shortage it is difficult to reconcile the Coal Board's warnings with the virile publicity which seeks to retain the domestic coal consumer and even win converts from other fuels. At all events, if this publicity campaign reaches the ears of the miners themselves it would appear to have little effect, since it is widely reported that miners are busily disposing of their ton-a-month allowance from the collieries, frequently selling it to the public at a substantial profit to themselves. Just what fuel is favoured by the miners for their own homes is not known.

ADVANCES IN THE CARBONISING INDUSTRY

On Monday of last week Sir Harold Hartley, President of the British Association for the Advancement of Science, opened in connection with the Association's annual meeting which starts in Birmingham today an exhibition at Birmingham University representing attractively scientific achievement throughout the ages. The conference ends on September 6, but the exhibition will be open to the public for a few days after that date. The exhibition, as Sir Harold explained, owed its origin to Mr. George Cadbury, who suggested that there should be some tribute to great Birmingham pioneers like Boulton, Watt, and Murdoch for their contribution to the industrial revolution. Unesco, said Sir Harold, had adopted the theme 'Energy in the Service of Man,' which was to be a subject considered by the Association; and he said how grateful the Association was to the National Coal Board, the Gas Council, and the British Electricity Authority for helping to make the exhibition worthy of the occasion. The Gas Council has co-operated with the West Midlands Gas Board in arranging a comprehensive display to illustrate the latest chemical and physical advances in the carbonising industry. Some attractive models have been made and show, among other things, a large gasworks of modern design and a sectional model of a gas turbine working on a closed circuit, using waste heat by

means of a heat exchange unit. There are also new models of vertical retort installations and the latest carburetted water gas plant; there is a full display of laboratory equipment for specialist purposes. Linked with the exhibition is a series of lectures at the Midland Institute, Birmingham. We gave particulars of those lectures of interest to the gas industry in the *Journal* last week.

Personal

Mr. **W. D. Akester** has been elected to the board of Ransomes Sims & Jeffries, Ltd., of Ipswich.

◇ ◇ ◇

Mr. **W. F. McCaw** has been appointed Chief Designer to E. Boydell & Co., Ltd., of Manchester, the manufacturers of Muir-Hill dumpers, loaders, and shunting tractors.

◇ ◇ ◇

Mr. **T. N. Jennings,** Secretary of **Radiation, Ltd.,** for the past 25 years, has resigned that office as at September 1, but will continue to act as a Director of the Company. Mr. **J. I. Thomson,** A.C.A., F.C.I.S., the Assistant Secretary, has been appointed to fill the vacancy.

◇ ◇ ◇

Mr. **P. C. Gardiner,** Chief Chemist of the Tottenham Division of the Eastern Gas Board, retired on August 16. Of his 45 years of service, 35 were spent as Chief Chemist. Until recently it was the practice for all personnel on the manufacturing side to enter the former Tottenham and District Gas Company through the Willoughby Lane laboratory, and it was for his work in providing their initial training and guidance in courses of study that Mr. Gardiner will be particularly remembered. His retirement was marked by a presentation ceremony.

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Mr. **W. A. Barnett.**—At the Works Club Room at Snodland, of the South Eastern Gas Board this month workmen and staff gathered to say farewell to Mr. W. A. Barnett, M.B.E., M.INST.GAS.E., M.I.MECH.E., M.INST.F., A.M.I.CHEM.E., late Engineer and Manager of the Mid-Kent undertaking. Mr. W. J. Hobbs, Chief Clerk of the undertaking, said that Mr. Barnett went to Mid-Kent in June, 1940, as Engineer and Manager. Since then much had happened which had made the task Mr. Barnett had to perform a formidable one. Among the events was the 'blitz' in February, 1941, on the Snodland works, for his action during which Mr. Barnet was subsequently awarded the M.B.E. Mr. Hobbs explained that Mr. Barnett had been appointed Distributing Engineer to the Kent County Division of the Board in June, 1949. The delay in saying goodbye to him had been brought about by the fact that he had continued to work from the Mid-Kent offices until the recent opening of Divisional offices. Mr. F. J. May, Works Superintendent, then asked Mr. Barnett to accept a gift from the employees which took the form of a fitted picnic case. Acknowledging the presentation, Mr. Barnett said that without the loyal support of all the employees the work of reconstruction at Snodland could not have been carried through. Though he was leaving the Mid-Kent undertaking, the employees could rest assured that he would not forget them or the happy times which they had enjoyed together. Mr. W. J. Warren, Sales and Service Department, also paid tribute to the work and service given by Mr. Barnett in improving the lot not only of the employees but also of the consumer.

Diary

Aug. 29-Sept. 9.—British Food Fair, Olympia.—(Gas Council Stand No. 28, Grand Hall.)

Sept. 5.—East Midlands Gas Consultative Council, Guildhall, Nottingham, 2.30 p.m.

Sept. 5.—Irish Gas Association: Annual Meeting, Municipal Technical Institute, Limerick, 10 a.m. Presidential Address of F. K. Thomas. Paper by W. Boden, 'Cast Iron Gas Mains,' Annual Dinner, Cruise's Royal Hotel, Limerick, 8 p.m.

Sept. 11.—Women's Gas Council: Executive Committee, at Gas Industry House, S.W.1, 1 p.m.

Sept. 18-22.—Association of Public Lighting Engineers: Annual Meeting and Conference, Bournemouth.

Sept. 20.—Southern Gas Consultative Council: Reading, 2.30 p.m.

COAL SAMPLING

The subject of coal sampling is touched upon in the July issue of *Fuel Efficiency News,* emphasis being laid on the fact that much time has been wasted by analysts because the material on which they have been asked to work was unrepresentative. Not only must the original bulk sample be taken correctly (which requires a minimum number of separate increments of a minimum weight depending on the coal quality and grading), but this sample must be reduced in accordance with a carefully determined procedure. For example, at least 168 lb. of 2-in. coal is needed to ensure that, with an ash content of, say, 10% to 15%, the final result obtained by the analyst can be expected to be within plus or minus 1% ash in 99 cases out of 100. This sample must be taken, however, in 42 or more increments of at least 4 lb. each. Before the sample is reduced to less than this weight, it must be crushed to a smaller particle size until eventually a fine powder is obtained from which the small samples for analytical test may be taken safely.

A considerable amount of work has been done on this complex problem and eventually the British Standards Institution issued specifications, the latest of which, on the sampling and analysis of coal and coke (B.S. 1016 and 1017) appeared in 1942. Methods are given also for the determination of total moisture in the coal sample, as, during the process of collection, crushing, and reduction, a considerable proportion of this water may be lost from the analysis sample and the result be invalidated. (B.S. 1016 and 1017 are now being revised in the light of a recent paper on the theory of coal sampling for ash determination.)

It is equally necessary to know the analysis of the waste gases from fuel-consuming plant and how to sample them. Draft standards have now been submitted by the British Standards Institution to industry for comment and these standards will, when published, satisfy a very real need.

A comprehensive survey of recent work on sampling, analysis, and testing of solid, liquid and gaseous fuels is given by Mr. A. H. Edwards in the *Journal of the Institute of Fuel,* May, 1950, in Progress Review No. 8, in which he includes 58 references to published literature. Reprints of the review may be obtained, price 2s. net, from the Secretary, the Institute of Fuel, 18, Devonshire Street, Portland Place, London, W.1.

A revision of the war emergency issue of B.S.351, Friction Surface Rubber Transmission Belting, has been issued. The document provides four fabric weights for use in the construction of belting, and gives full constructional details and test requirements. It also incorporates appendices dealing with service conditions. Copies of this standard may be obtained from the British Standards Institution, 24, Victoria Street, London, S.W.1, price 2s. post free.

The Ministry of Town and Country Planning has ruled that the making of two shops into one, by demolishing the internal dividing walls, does not constitute a development within the meaning of the Town and Country Planning Act. The Minister states: 'The "external appearance" of a building is what can be seen from the outside and it is of no consequence whether the premises within which the work is done are to be regarded as forming one building or two, provided that the work will not materially affect the appearance of premises as seen from the outside.' This means that a development charge under the Act would not arise; but the Minister's statement does not cover cases where a material change of use is involved.

The first British Standard for circular screwing dies and hexagon die nuts was issued in 1943 as a war emergency standard, when its primary object was to bring about a simplification in the variety of outside diameters of circular screwing dies. Provision was made for nine outside diameters of circular dies, applicable to all sizes of thread up to 2 in. B.S. Pipe (Parallel) thread, any particular thread being associated with not more than three diameters of die. After review in the light of present day conditions it has now been adopted as a British Standard and is issued in the form of a revision to permit the addition of dimensions for a comprehensive range of hexagon die nuts for all sizes of thread up to 4 in. B.S. Pipe (Parallel) thread. Copies of this Standard (B.S.1127: 1950) can be obtained from the British Standards Institution, 24, Victoria Street, S.W.1, price 1s. post free.

Current Thought on the Service Side

A Review of Recent Papers to the Gas Salesmen's Circles

'EITHER you can sell,' said Henry Ford, 'or you can't.' He meant that salesmen are born and not made, and he should have known. Which makes it all the more surprising that for years and years gas salesmen have discussed the whys and wherefores of the art—nowadays they call it the 'know-how.' The fact is that natural aptitude is most valuable, but skilful training can work wonders with an apparently unpromising would-be salesman. The salesmen's views on salesmanship have changed little with the years, but there are always the new angles and changing conditions to keep interest alive. The following article reviews briefly some of the papers presented to Gas Salesmen's Circles during recent months. It must be remembered that changing conditions are not peculiar to the public—the market, that is. They have lent their influence to the Circles themselves. It took time for nationalisation really to affect the Circles' mode of operation. It has done so, but for the most part not drastically. Attendance at meetings is, if not a matter of compulsion, at least more politic than was formerly the case. In some cases the eligibility of members has suffered a sea change and fitting staffs are more widely represented. But the subjects under discussion remain well-nigh constant: How to sell gas, how to sell appliances, how to sell coke, how to sell service, and all the matters related to this business of providing with a heat service second to none.

It is only fitting that this cross-section of current thought on salesmanship should commence with the actual process of selling and the part played by the Salesmen's Circles in assisting salesmen to reach the height of their powers. H. B. Collins, who is Sales and Consumer Service Manager of the Brighton undertaking and also Chairman of the Southern District (Sussex Area) Circle, put the matter succinctly when he was guest speaker at a meeting of the Kent Area Circle. 'The function of a Salesmen's Circle,' he said, 'is to create opportunities of discussion in an atmosphere of good companionship so that the knowledge of each may be nourished and enhanced by the views of others, never supposing that there is no truth but in that which we believe, and always incorporating in our own theories that which we regard as sound and wise in the views of our colleagues. Fellowship is an essential and of far greater advantage than the triumph of our own opinion, as only in fellowship can we really get to know the other fellow and appreciate his point of view.'

Undignified Selling

Mr. Collins deplored the lack of dignity which had been the salesman's lot in past years. 'Perhaps,' he said, 'it is precisely this which has been lacking in years gone by and has tended to relegate those of our profession to a status whereby we could make no real contribution to the forward movement of the industry; rather, indeed, were we inclined to become fellow passengers in the natural expansion of a socially-acceptable public service.'

Referring to the hardening market, Mr. Collins spoke of the opportunities which now presented themselves of getting away from the half-hearted and frustrated efforts at selling in recent years. 'It cannot be doubted,' he said, 'that in the past the gas industry has not been engaged in that robust salesmanship practised in the highly competitive world outside the industry; rather has it relied upon a tradition of service on the one hand and the inherent quality of its fuel on the other, for a great deal of the business that has come its way.'

Publicity was a subject on which the speaker dwelt at some length—even to the extent of indicating the bad impression created by fitters who 'drift round the community pushing bicycles festooned with tool kits and drip tins, in greasy macs and collapsed and shapeless uniform caps.'

A Word of Warning

He ended on a warning note: 'Do not let us imagine that under the industry there is a raft of security, because at one stage we are able scientifically to treat the diminishing resources of coal upon which it is suggested our national prosperity depends. The *raison d'etre* for our industry as far as we are concerned is the fuel service we are able to offer.

'It is true that we may be a many-sided industry interlocked in public service and economic consideration, but it is our duty to cast away the nostrum of indispensability and concern ourselves with the promotion of the industry's welfare through the advancement in public appreciation of a fuel service which can do so much to increase the standard of living by the abolition of domestic drudgery on the one hand and the promotion of industrial efficiency on the other. Let us not be deluded into thinking that competition derives only from competitive fuel.'

A similar call for a new outlook and positive action came from J. R. Firth in his Chairman's Address to the South Western District Circle. In particular he emphasised that the part which sales were destined to play in the future was somewhat lacking in clarity. 'We have been a nationalised industry for more than 12 months,' he said, 'and one is drawn to the conclusion that too many undertakings in the past have not been giving the service that should be synonymous with the word "gas." There is ample evidence that the manufacturing side of the industry is receiving its full quota of attention, as also is the transmission problem. So far as the sales aspect is concerned, many parts of the jigsaw puzzle are taking their places, and we are gradually getting some idea of the ultimate picture.'

Importance of Training

Success in the future, he felt, depended to no small extent upon training, and, elaborating his theme, he called upon all who were in a position to do so to select young men and women who had the necessary technical and commercial training, or who were willing to study for it, and place them in direct contact with the public and those people who make it their business to provide the public with cooking, heating, water heating and other services; moreover, they should be encouraged to specialise.

'If gas is to remain in the van as the most important fuel for the people,' he concluded, 'let us resolve to get busy now by giving these young men and women the benefit of our experience so that they can link this with their own knowledge, and go forward in the coming years confident in the product they have to sell and in their ability to sell it to the public.'

So much for the broad outline of selling; now for the close-up, the examination of the thousand tiny points which combine to make a sale.

S. R. Carr, who is Group Sales Superintendent at Aylesbury, subjected the business of selling to a searching examination in a paper to Home Counties (Western Area) Circle, entitled 'Views and Experiences of a Salesman.' He dealt, for example, with the desirable attributes of a salesman (sharing with the many who have preceded him in the task a belief that a salesman should be human and superhuman at the same time) with the respective claims of the gas industry's competitors (very properly treating the development of coal publicity with respect), and with sales prospects on new housing estates. Particular reference might be made to his remarks concerning the maintenance of suitable consumer sales records. They are, he suggests, the source which gives life to a successful attacking sales policy, and he advocated the system of having a sales record and information card for every house, building, consumer, or meter within the area of supply. These cards would record the type and size of meter, size of service, types plus dates fixed of all gas appliances, information in respect of all other fuels in use, the average annual consumption for gas, and any other unusual data that may prove useful in the future. When compiled, they should be kept up-to-date with information taken from the daily job vouchers and any subsequent calls by any member of the sales staff would be recorded, together with the date, caller's

signature, a note stating if the consumer was satisfied, and, where applicable, a note in respect of a future prospective sale. Thus there would be a permanent sales record to enable future sales campaigns and specialised canvasses to be conducted according to a district's needs with the minimum waste of the salesman's time. Thus a water heater sales campaign, in conjunction with showroom displays, advertising, etc., would be made easier and more forceful by the use of the record cards. All houses known to have no means of providing hot water would have their record cards abstracted from the file and the respective salesmen given the appropriate cards; then, after briefing, the necessary canvass would take place. This could be followed by a canvass of houses shown by the cards to have only solid fuel hot water systems, being good prospects, at least for alternative summer water heating by gas.

Value of Consumer Records

The cards would not only eliminate needless calls during specific canvasses, but would supply pre-sales investigation data and at the same time give easy entry into most premises. The author suggested that the best way to commence compiling these records was by an organised house-to-house general canvass, completing the information as the salesman went along. This might take six or seven months, but would produce both sales and goodwill in the process. His undertaking had found that an average of 40 calls per day per salesman could easily be maintained, at the same time producing an average of one sale with three excellent prospects per 40 calls. This was not all, for at least one consumer's mind would be set at ease each day in respect of either a complaint or misunderstanding, and thus another stage of service to the consumer would be accomplished.

The application of psychology to selling technique is a subject which constant repetition has rendered somewhat irritating to the listener or reader: the more so as the vast majority of speakers on this subject clearly have no conception of what psychology is. But there is more to the matter than a lay author's happy dalliance with lengthy and obscure words. Selling has always depended on psychology, but the fact has only been recognised since psychology was so christened. E. R. Nettleton, Sales Manager and Installation Superintendent at Rochdale, is clearly somewhat enamoured of the subject, for his paper, 'A Psychological Approach to Selling,' presented to the North Western Circle quoted Freud with disarming confidence. He set out, very successfully, to show how even a rudimentary grasp of the principles involved could be utilised in conversation with a prospective customer. For example, he placed particular emphasis on the advantage to be gained by encouraging people to agree with one.

'In talking with people,' he said, 'it is best to begin by discussing things in which you agree and not things in which you differ. Begin by emphasising and keep emphasising, if possible, that you are both striving for the same end, something which will benefit the customer. The secret is to get the customer saying "yes" at the outset and to do your utmost to prevent him from saying "no." A "no" response is a most difficult handicap to overcome. When a person has said "no" all his pride of personality demands that he remain consistent with himself. He may later feel that the "no" was ill-advised; nevertheless, there is his personal pride to consider. Once having said "no" he must stick to it. Hence it is of very great importance that a person be started off in the affirmative direction.'

According to the author, the skilful salesman at the outset should describe the job and use phraseology likely to bring out a number of 'yes' responses. He thereby sets the psychological processes of his listener in the affirmative direction.

'When a person says "no,"' affirmed Mr. Nettleton, 'and really means it, he is doing much more than just saying the word. His entire being gathers itself together into a condition of rejection. But when he says "yes" this condition of rejection does not exist. In its place is a condition of acceptance. It is obvious, therefore, that the more "yeses" you get at the beginning of the interview the greater is your chance of success. The "yes" response is a very simple technique and yet how neglected. It seems as if people get a sense of their own importance by being antagonistic at the outset. Once they have said "no" they seem to feel that they must make a stand and that to say "yes" afterwards is the sign of weakness.'

Focus on the Showroom

On such a note of agreement, it is interesting to pass to another aspect of the salesman—his environment. If he is a showroom salesman, the showroom itself will play an important part in the salesman's work. Appreciating this, Oakley W. Thomas, Chief Salesman at Swansea, presented an interesting paper entitled 'The Gas Showroom—its Function and Importance' to the South Wales District Circle. He dealt with such matters as decoration, design of windows and their lighting, display of appliances, and similar points in much the same way as many authors before him. But having had his say about the conventional aspects of the ordinary gas showroom, he revealed what are clearly some of his secret ambitions. For example, he advocated the introduction of a rest and writing room to keep gossiping friends from blocking the doorway. And take this extract: 'Often nowadays a consumer brings into the building a small appliance, a gas iron for adjustment, or a poker to be fitted with a new blade. If a small room could be fitted with a bench, vice and a few well-chosen tools, such minor repairs could be done on the showroom premises. Repairs while you wait are greatly appreciated by the consumer; a delay of two or three days occasioned, if it be necessary to send to the fittings shop, is avoided, and our reputation for service becomes enhanced.'

The problem of children who, bored by waiting while their parents conclude their business in the showroom, have a tendency to make themselvse both seen and heard has also exercised the author's mind. He therefore suggests various distractions for the young, such as a small aquarium to be set aside in a corner in order to give freedom of movement on the main floor and keep the children quiet.

Here is another point: 'The majority of people call at the gas offices to pay their account or to choose an appliance, having already made up their minds beforehand, but how can we attract others who perhaps never consider visiting the showroom? Many London stores have a Post Office in the building, so why not incorporate such a department in the showroom scheme? An architect could plan this addition in such a way to ensure that while the Post Office would function as an integral part of the whole during showroom hours, each section would be autonomous, each free to carry on business independently of the other when the working hours did not coincide. More people than ever now visit the Post Office in this country; surely we can find many potential buyers among the number?'

Support for the Fair Sex

There are many who advocate the employment of more women in showrooms, and Mr. Thomas is among them. He has no illusions, however.

'It is claimed,' he says, 'that women have more patience than men when faced with a difficult customer. That is a debatable point, but at least it can definitely be said that when times are quiet a woman looks quite at home with a duster in her hand, whereas men look awkward and embarrassed.'

Another champion of the ladies is H. W. Rumble, of Camberley, who in his paper 'The Importance of the Showroom Salesman,' presented to the Home Counties (Western Area) Circle, had this to say: 'I consider that, subject to getting the right type of person, a woman is invaluable for advising on showroom lay-out, and a woman has just that "something" which often makes all the difference between an ordinary window display and one which is out of the ordinary. This is particularly applicable where colour schemes are concerned. A woman consumer,' he stated, 'will definitely appreciate the lady representative's help and advice on choosing a cooker, washing machine or gas iron, but will fight shy of discussing water or space heating (except perhaps in the case of portable heaters), and want to have the services of a salesman. That, I think, is reasonable and understandable. A woman who is discussing technicalities does not sound either sincere or convincing, and when it is a question of water and space heating, a certain amount of information on the mechanical performance is usually required.' He also included this cynical comment: 'While men like to have the attentions of a charming lady assistant, they do not often believe what they say! They will listen attentively and probably agree with what is said, causing the lady to imagine she has led him the way *she* wants him to go, but in the end he makes up his own mind.'

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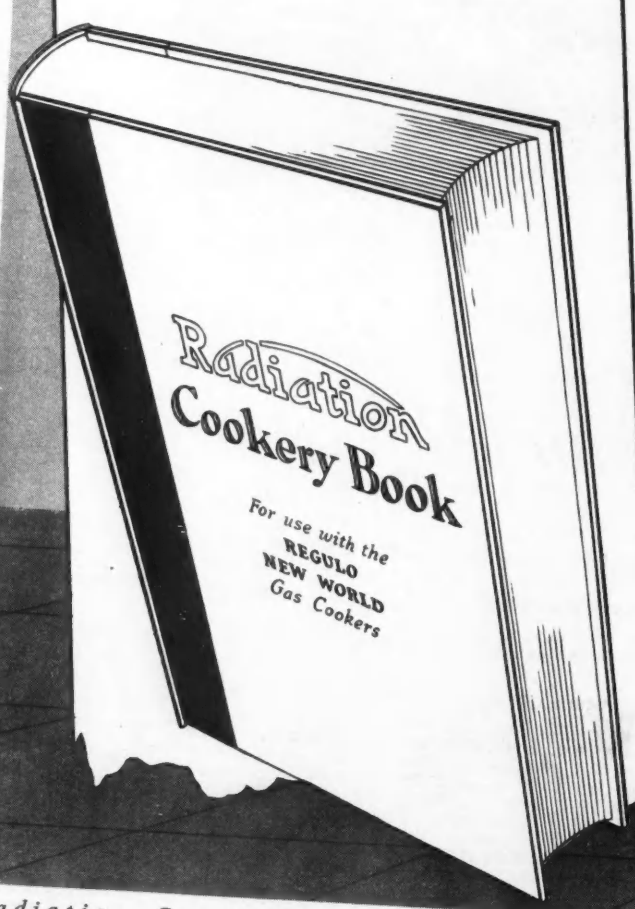

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Instrument Technology

The Society of Instrument Technology has issued No. 1, Volume 2, of its *Transactions* covering a series of four papers presented between November, 1948, and January, 1949, edited by Dr. Harold Moore, C.B.E., the Society's Treasurer and Editor. The Society was established nearly six years ago for the advancement of instrument technology by disseminating information and promoting discussion relating to the design, application, and maintenance of instruments, by encouraging research and technical education in the subject, and by raising the status of those employed in the manufacture and the use of instruments.

Standardisation of instruments, components, and terminology is also an important concern of the Society. Its main field of interest is instrumentation applied to all types of industrial manufacture, but every aspect of instrument technology comes within its scope. The constitution of the Society's council provides a balanced representation of users and manufacturers of instruments, of research and education, and of the local sections centred in Glasgow, Manchester, Teesside, Birmingham, and Cardiff.

With the present issue *Transactions* becomes a quarterly publication. Other directions of increased activity of the Society are indicated by the formation of a representative Education Committee reporting to the council, and of a Control Section.

The Society has a growing membership, divided approximately equally between makers and users of instruments. A larger membership is needed to sustain the increased activities of the Society.

'Shopping Weeks'

Two Birmingham District Branch Superintendents recently organised 'Shopping Weeks' in their respective suburbs. Both ventures were very successful, showing a 40% increase on previous sales.

In addition to the activities of these two representatives gas gave excellent service to the shopping drive in other ways. The Home Service Section arranged cookery demonstrations and cake baking competitions which proved popular features with some 150 entries. The prizes—gas appliances donated by the undertaking—were on display for a fortnight in the branch offices. These prizes, together with the awards for window dressing and other competitions, made the gas showroom windows focal points in the suburbs.

Gas did not miss the opportunity to cry its wares through publicity with leaflets, the Press, and the scores of demands for competition forms from the showroom staff. In the procession of decorated vehicles the cream and green colours of the West Midlands Gas Board showed themselves in proud—and be-sloganed—display.

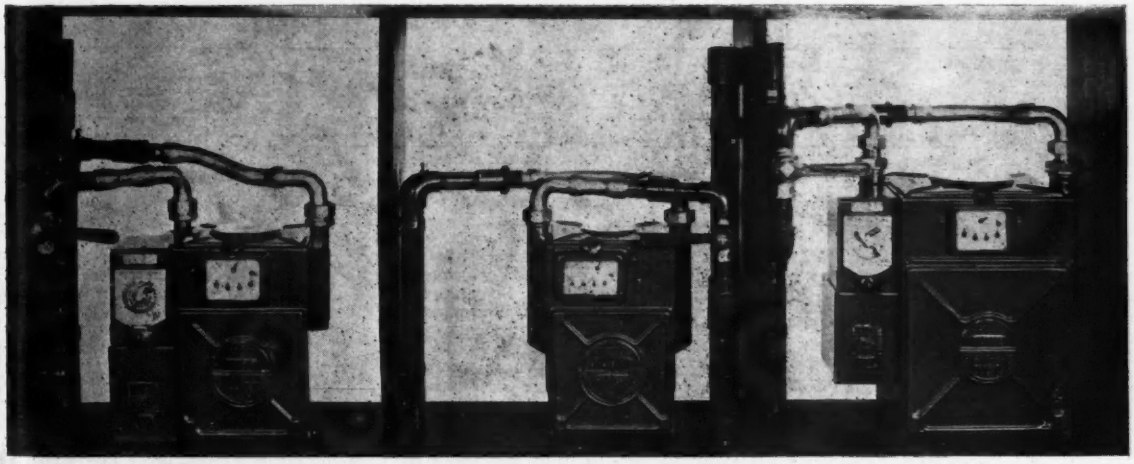
Analytical Chemistry

Until September 10 the Science Museum in South Kensington will contain a special display of old and new apparatus used in chemical analysis. Its purpose is to show the development of modern refined methods of analysis and also the way in which new discoveries in other branches of science may be pressed into the service of the analytical chemist.

Some of the apparatus shown is working and in particular there is a push-button demonstration of the principles of radio-chemical analysis in which visitors can bring radioactive specimens in turn in front of a device for measuring their activity. Microbiological analysis (analysis of substances by means of their effects on the growth of bacteria and moulds) is another new technique, the principles of which are explained with the aid of laboratory specimens.

This small exhibition was originally planned for the benefit of the 200 analysts attending the Royal Institute of Chemistry (London Section) Summer School in Analytical Chemistry. It was later decided to present it in a form suitable also for the general public and the Science Museum prepared the display with the co-operation of leading instrument manufacturers, Government departments and senior staff in some of London's technical colleges.

PREFABRICATED CONNECTION FOR METERS



The North Thames Gas Board has been experimenting for some time at Watson House with different forms of prefabricated meter connections, and the type developed by the board and shown in our illustration has been selected for a large scale trial on the district. The inlet and outlet connections have each been standardised and are prefabricated. They have soft soldered capillary joints, and the short lengths of lead pipe used in the connections allow for reasonable tolerance in the relative terminating positions of the service and installation pipes, and in addition provide sufficient flexibility to accommodate without strain slight variations in meter dimensions. It is anticipated that the flexibility thus obtained will make the new connections more generally applicable than would be the case with the familiar rigid type of prefabricated connections. Our photograph shows how, by using identical pairs of the new connections, a 100 S.H.C. ordinary, a 100 S.H.C. prepayment, and a 200 S.H.C. meter can be installed. High capacity meters can be fixed in a similar manner. The same prefabricated connections may be used to exchange a 100 S.H.C. meter for a 200 S.H.C. or *vice versa*. Any slight alteration to the service and installation pipes that may be necessary can be made readily with standard pipe fittings. The appearance of the finished job compares favourably with that usually obtained by older methods. The district trials will indicate what economies can be achieved by the new method.

It is intended in the first instance to retrict the use of these prefabricated connections to installations in new property, but there is reason to believe that as experience is gained they will in many cases be applicable to meter fixing in existing property.

Tar and Ammonia Operations in 1949

Continued Trend Towards Concentration of Works

THE report for 1949 of the Chief Inspectors of Alkali, &c., Works—the 86th of the series—shows that the total number of works registered under the Alkali, &c., Works Regulation Act, 1906, was 969, involving the operation of 1,741 separate processes. Compared with 1948 the totals show a reduction of 14 works and 25 processes. The reduction relates in the main to sulphate of ammonia, tar, and benzene works, *i.e.*, by-products of the coal carbonisation industry, and follows the trend that has been apparent for several years past.

Several coke ovens have been rebuilt with consequent increased throughput. New batteries are either in course of construction or are planned. In every case representations have been made with a view to securing the best practicable means for minimising smoke, grit, and fume emission. While it cannot be said that the response has been enthusiastic, the representations have not been entirely in vain, particularly where the National Coal Board has been concerned.

The report states that the use of gas liquor plants has been fairly satisfactory. They are not always popular on account of their liability to suffer interruption by reason of delays in transport of concentrated liquor, corrosion difficulties, choking of condensers, and heavy consumption of steam. Nevertheless the newly formed gas boards are giving much consideration to gasworks effluents and are contemplating a number of new concentration plants chiefly in order to avoid the discharge of raw ammoniacal liquor. Trials have continued of aluminium alloys in place of cast iron at points where severe corrosion occurs and encouraging results have been obtained.

In a number of instances at both gas liquor and sulphate of ammonia works it was necessary to call attention to failure to use the 'best practicable means' as required by the Act. Such offences were of a relatively minor character and did not necessitate more than a formal communication to the works concerned.

Operation of tar works, states the report, was in general more satisfactory. The tendency to concentrate tar distillation at large central works and to replace discontinuous pot stills by continuous units of much greater throughput is welcome, for small units are likely to cause more offence in proportion to their throughput than are large ones.

Despite acknowledged improvements there were a number of occasions when the inspectors had cause to comment on unsatisfactory conditions. Sometimes foul gas systems were not in use, sometimes purifiers were found in a spent and inefficient state, and sometimes pitch fume traps were inoperative. Ingenious excuses were proffered on these occasions, but although inspectors may feel a good deal of sympathy they must insist on conformity with the provisions of the Act even if no particular harm seems to be resulting from an infraction. Uncondensed gases from tar stills and preheaters must be efficiently removed at the condenser coil ends and either burned or suitably purified before discharge to the atmosphere. Pitch fume must also be trapped.

The figures in the tables are abstracted from the report, which is obtainable from H.M. Stationery Office, price 1s. net.

The report of the Chief Inspector for Scotland states that the total number of works registered was 80, a decrease of five in comparison with the previous year. Processes operated numbered 120, a net decrease of five, the actual changes being the addition of one lead deposit process and the removal of six processes, namely, three tar distillation, one chlorine usage, one sulphate of ammonia manufacture, and one zinc recovery.

The proposed extension of a battery of coke ovens gave rise to concern since complaints had been received in the past about atmospheric pollution caused by the same battery. A joint meeting was held with the owners of the battery and representatives of the responsible local authority. After discussion action was agreed which should minimise cause for complaint. A certain amount of inconvenience from green gas seems almost inevitable near coke oven batteries, although attention to detail in design and operation of the ovens can do a lot to reduce emission. The Chief Inspector recalls that the increasing tendency to waste gasworks by-products ammonia by discharge to water courses, and so pollute them, has been the subject of comment in previous reports since the war. In brief, it appears that increasing costs in sulphate of ammonia manufacture outstripped increases in the selling price, with the result that small manufacturing units at gasworks became uneconomic. Centralised manufacture also became uneconomic and now fully 60% of the by-product ammonia is wasted. Paradoxically world demand for sulphate of ammonia has increased and the wasted ammonia is replaced by synthetic ammonia, with the consumption of more coal.

Concentration of the tar distillation industry continued, the erection of another large continuous still being put in hand at one of the central works. Three small distillation works closed down. On the whole the disposal of foul gases arising in the distillations was effectively carried out and there were no complaints against any of the works.

ENGLAND AND WALES

Ammonia

Tons. Produced at Registered Works and Government Factories

	Salts of ammonia expressed as 25% NH_3	Concentrated ammonia calculated to 25% strength
From liquor ex gasworks ...	95,900	51,000
From liquor ex coke ovens ...	183,800	22,600
From synthetic processes ...	908,400	1,237,300
Total	1,188,100	1,310,900

Much of the concentrated liquor was subsequently converted to salts. The total of salts plus concentrate is therefore greater than the net production of ammonia.

Tar Distilled and Pitch Produced

Tons.

	1949	1948	1947
Tar distilled originating at :			
Gasworks	1,375,100	1,343,700	1,234,000
Coke ovens	828,300	826,000	767,000
Other works	51,100	44,800	69,600
Total tar distilled	2,254,500	2,214,500	2,070,600
Distilled or dehydrated to refined tar	553,800	601,000	583,600
Distilled to pitch	1,700,700	1,613,500	1,487,000
Gross pitch production	916,500	874,000	776,400
Pitch oiled back	338,500	302,000	294,300

SCOTLAND

Production of Sulphate of Ammonia

	1949 (tons)	1948 (tons)
By-product of :		
Gasworks	10,300	9,207
Coke ovens	12,300	12,560
Shale works	17,500	17,569

In addition 398 tons ammonium carbonate was manufactured from by-product ammonia.

Production of Liquor Ammonia

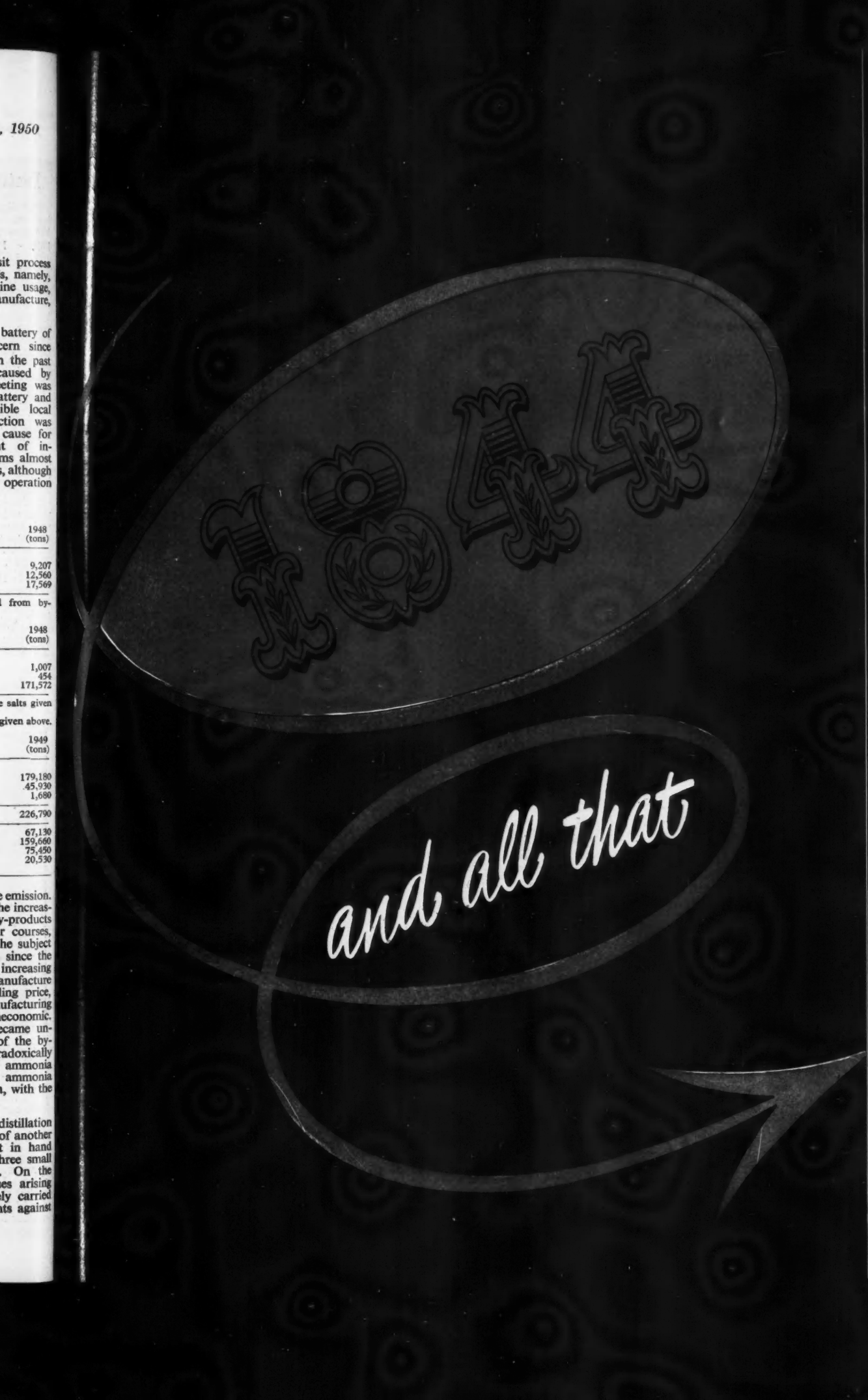
	1949 (tons)	1948 (tons)
Concentrated crude by-product ammonia liquor (15%)	850	1,007
Pure by-product ammonia liquor (25%)	420	454
Synthetic ammonia (expressed as 25% liquor) ...	163,100	171,572

All but 79 tons of the by-product liquor was converted into the salts given above. It was all derived from coal carbonisation.

9,890 tons of the synthetic ammonia was converted into salts not given above.

Distillation of Tar and Production of Pitch

	1949 (tons)
Tar distilled originating at :	
Gasworks	179,180
Coke ovens	45,930
Other works	1,680
Total tar distilled	226,790
Distilled or dehydrated to refined tar	67,130
Distilled to pitch	159,660
Gross pitch production	75,450
Pitch oiled back	20,530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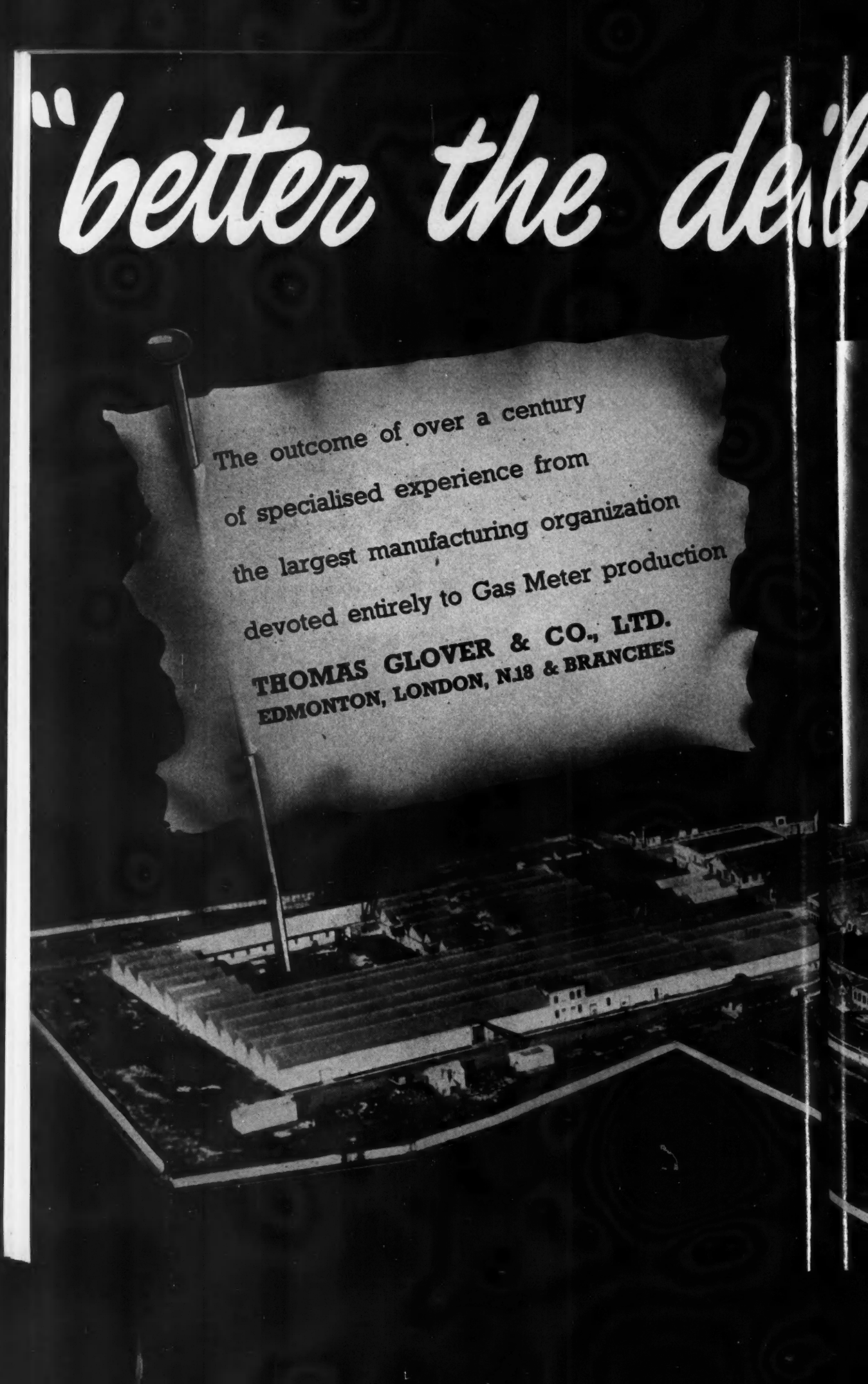
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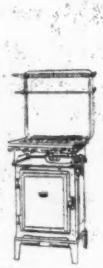
1935

1938

1946

1949

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Short Paper Symposium at Tenby

Wales and Monmouthshire Miscellany

FOLLOWING are summaries of the short papers presented at the meeting of the Wales and Monmouthshire Association of Gas Engineers and Managers at Tenby. The short paper session was a new departure for the Association and no fewer than 15 contributions were available, but the time factor restricted the number presented to seven.

Safety Device for Electrical Detarrer

Mr. **O. P. Cronshaw** (Rhyl and Prestatyn), in a short paper on 'Safety Device for Electrical Detarrer,' said that in the view of the majority of manufacturers of detarring plant the causes of explosion in detarrers were largely due to negligence on the part of the operating staff. Two recent personal experiences led him to suggest that an explosion was just as likely to be caused by some unforeseen development on the works.

The first of these experiences occurred while the bulk of the works staff were at lunch. On the works concerned the overhead foul main was built up of welded steel sections, supplied by a reputable firm of engineers, and had been in use about 15 years. The first sign of anything untoward happening was that a considerable quantity of liquor was running down the walls of the fitting shop. Investigation revealed that one of the steel sections had split along the weld, leaving a large hole which allowed the ingress of a considerable quantity of air. An interesting fact about this happening was that although the Sigma was fitted with a purge burner, no prior warning by means of a considerable drop in C.V. was given. Had a detarrer been installed on this works, the consequences might have been disastrous.

The second and more recent experience happened one evening in February. One of the stokers on his way to rod discovered that the wire compensating rope on the retort house governor had broken and allowed the governor valve to close. Air for purification purposes was being admitted at the inlet of the exhauster. The electrical detarrer was situated on the outlet of the exhauster which continued to function. Fortunately the men on duty realised the gravity of the position and promptly shut the detarrer down. It required little imagination to visualise the results if they had not acted so promptly.

A survey of the probable causes of explosions in detarrers indicated that they were caused by one of the following conditions: (1) Improper purging of the detarrer prior to starting up. (2) Air admitted prior to detarrer, either for purification purposes or due to structural or operational failure, *e.g.*, pulling of a seal pot. (3) Air admitted after the detarrer for purification purposes backing up into the detarrer due to failure of the exhausting plant.

It was decided that as far as the Rhyl works was concerned point No. 3 did not arise since air for purification would, in future, be supplied by means of the exhausting plant itself. Further consideration of the problem suggested that the first point could reasonably be omitted since it was virtually impossible to cover this contingency by means of a safety device.

The most logical system giving warning of the formation of explosive conditions would appear to be the C.V., but it would seem necessary to arrange for a drop of, say, only 50 B.Th.U. in the C.V. of the make gas to actuate the device.

The principle finally settled was continuously to pass through small bore tube a stream of gas drawn from the outlet exhauster to and through a small ignition chamber containing a sparking plug or heated element, and at the same time arrange for a predetermined proportionate quantity of air to the ignition chamber. In normal circumstances the gas and air mixture not being explosive in character would pass through the ignition chamber to inlet exhauster or to atmosphere.

If, however, the C.V. of the make gas dropped by, say, 50 B.Th.U., due to air infiltration, this would be sufficient to make the gas and air mixture in the ignition chamber explosive.

Should such a predetermined explosion be created in the chamber, the sudden increase in pressure would deflect a flexible diaphragm, breaking a contact connected to the remote control on the detarrer electrical panel. This interruption would bring out the main contactor and render the high tension circuit inoperative until re-set. The detarrer would, therefore, be put out of action before the gas actually being handled reached explosive limits, and the Klaxon horn would immediately give warning that the detarrer was out of use.

In addition to this the pressure in the ignition chamber causes 'U' seal tubes fitted to the inlet and also fitted on the outlet to be flooded with a liquid seal. Their respective differentials are arranged to overcome the normal pressures of the gas and effect a complete seal until re-set. This effectively localises the effects of the explosion. The inlet seal is designed also to act as a washer and to keep the apparatus clean internally. During preliminary trials the apparatus has performed satisfactorily and, as was expected, by varying the quantity of air passed into the ignition chamber, the apparatus can be arranged to function over a wide range of C.V.

Thermal Efficiency—Coal Gas

Mr. **John H. Daniels** (Milford Haven), in a five-minute paper on 'Thermal Efficiency—Coal Gas,' said that in view of the fact that alterations had been made from time to time in the method of computation of thermal efficiency, he had re-calculated the figures relative to his own undertaking on the basis current in February this year. The results showed a maximum of 66.4%, a minimum of 56.3%, and an average of 60.4%. They used steam for power, for steaming, for driving works auxiliaries and for pumping about one-quarter of the gas sold. The steam thus required was made from breeze, most of which was purchased, and as this appeared to be an obvious source of trouble he took out the figures, excluding fuel, for steam raising. In these circumstances, the maximum was 75.2%, the minimum 67.2%, and the average 70.4%.

The calorific value of the gas made was recorded by an instrument which was check-tested weekly and the monthly average was computed by the use of an averaging scale. The volume made was measured by means of a Holmes-Connersville meter of proved accuracy, but was not corrected for temperature and pressure variations from standard conditions. Tar was sold by weight and its specific gravity and water content were known. The water content was low and consistent. Heats were taken daily and remained very steady. Retort pressure conditions were good and steady. As their carbonising plant was intermittent verticals the volume of water used for coke quenching was controlled and, in fact, remained constant at the minimum necessary for this purpose. Weighing of coke sold was a weakness, however, for they had partly to rely on the railway authorities, whose figures had in the past proved to be inaccurate. A further weakness was that they had to take the advised weights of coal carbonised which happened to be water-washed.

For all practical purposes the variables in the efficiency formula as applied to the works were therms of gas, coke made for sale, and tar made. Assuming coal at 310 therms per ton, producing 70 therms of gas, 8 cwt. of coke and 14 gal. of tar per ton of coal carbonised, the efficiency figure became 67%. If a 10% increase in efficiency figure was required, 31 therms per ton of coal carbonised must be found. In other words, they could increase the gas made to 101 therms per ton, or the tar to 31 gal. per ton or the coke to 10.1 cwt. per ton.

Clearly then, the significant figures in this calculation were coke made for sale and coal carbonised. The weights of these two components of the formula were vital, yet they were just those most open to question owing to the difficulties of weighing and being liable to substantial alterations in free water content.

The law of averages, too, was bound to play its part so that all the variables could be expected to operate towards depressing the figure at one time and to inflating it at some other time. A variation of 10% could, in fact, represent plus and minus 5% from some datum. Indeed, from experience he was of opinion that a variation of plus or minus 5% from the average efficiency figure over a period of steady conditions could have no other significance.

Observing, however, that the limit

mentioned permitted of quite excessive variations in gas, coke, and tar production, he was unable to see the practical significance of this so-called efficiency figure, even when confined to one undertaking. If his reasoning was substantially correct, it was obvious that the plus or minus 5% tolerance would be quite inadequate to cover comparisons which might well be made between undertakings in this connection.

Economics of Producers

Mr. **J. Powdrill** (Pontypool), in a short paper on 'The Economics of Producers,' said the function of the producer was to supply gas of the right composition to the retort setting. The basis of its efficiency was the relation between the B.Th.U. in the form of coke into the producer and the B.Th.U. supplied into the setting as producer gas. The modern step grate producer would give an efficiency of about 85% to 87%. A slightly better figure might be attained with certain types of producer, but 85% was near enough. Taking a figure of 32 therms per ton of coal carbonised for verticals, 38 therms for intermittent verticals, and 42 therms for horizontals, it was a simple calculation to work back to the theoretical coke consumption of the producer. At the Pontypool works 11.75% of the run of retort coke was breeze, and as all coke above ½ in. was sold, the overall value of run of retort coke to producers was 63s. 6d. per ton. Each 1% difference in the amount of coke going to producers meant a difference of £3,000 per annum.

He suggested that they should draw out a theoretical target for coke to producers for their own works as a percentage of coal carbonised, and against that percentage set the actual figures in money represented by that percentage. Such a scale would be a quick and simple yardstick for increasing works efficiency. To accomplish any great saving on producer fuel consumption the whole of the carbonising system must be tuned up.

Unusual Booster Experience at Bangor

Mr. **J. R. Wood** (Bangor) relating an 'Unusual Booster Experience at Bangor,' said that on a recent Sunday morning he was called to the works because, he was told, they could get no gas away from the retort house. The foreman had made an examination and so far as he could see everything was in order. The Bryan Donkin retort house governor, which had done some excellent work and was still doing so, was obviously not functioning on that occasion. The stoker informed him that the trouble began as soon as the booster was started up. He therefore told the foreman to stop the booster, and the stoker immediately reported that everything had gone right again in the retort house. The booster was restarted and everything went wrong. Having ensured a sufficient supply for the day he again stopped the booster, but the trouble started again on the next day when it was restarted. In due course the governor was cleaned and a new diaphragm was put in, and they thought they had solved their problem, but when the booster was put to work the trouble was as bad as ever.

He came to the conclusion that there was some water somewhere in the system. He had the holder syphon dipped and was surprised to find there was no water at all in the syphon. He persisted in his theory that there was a build-up somewhere, that there was water lying in a section of the main, and that as soon as the booster started the water started surging. Further investigation confirmed his theory, for when the suspected section of the main was sprayed with hot Solvit and gas oil, no less than 40 buckets of water were taken out of the holder syphon and the trouble ceased immediately.

Storage versus Instantaneous Water Heaters

Mr. **G. Fitton** (Neath), dealing with 'Storage versus Instantaneous Water Heaters,' said hot water had ceased to be a luxury and had become a necessity in the average home, and in certain towns in Wales there was tremendous scope for gas in this field. The Heyworth Report in 1945 indicated that the water heating load represented a substantial potential market. Demands for hot water in the home as high as 75 gal. for a family of four per day had been quoted. This was probably a high estimate in some circumstances, but taking only 40 gal. per day at 70% efficiency with gas at 1s. per therm, the load would represent 4s. 3d. per week per consumer. The storage versus instantaneous controversy went back many years. Before the war there was a leaning towards the instantaneous heater, no doubt due partly to the publicity afforded by one notable firm of manufacturers. The instantaneous heater had been, and always would be, entirely dependent on the availability at all times of adequate gas and water flow to the appliance. Where, as was often the case in terrace property, the meter was in the front of the house and only the water tap in the rear, there was often the question of re-carcassing in addition to problems of service and meter capacity; maintenance, too, on the scale practised before the war, could be a serious financial burden on the industry, absorbing the profit derived from the appliance. It was for these reasons that it was now necessary to reconsider the position. High efficiencies had been claimed for the instantaneous heater, but the actual overall practical efficiency of, say, a large multi-point heater used intermittently for small quantities of water was a different proposition.

The storage heater tended to more economical habits of utilisation. Thermal efficiency was drilled into them throughout the industry, but the effectiveness of an appliance was even more important. The prime cost of the two types was much the same, but the installation cost of the storage heater was less because of the lower gas rate and the dispersal of the products of combustion was a simpler proposition. The case for storage heaters was being reinforced by the departure from the all-instantaneous policy by one large firm. The appliance manufacturers had made available a wide range of appliances, so that especially in the water heater field the making of the right choice to meet local conditions was a strong argument for the leaving of the responsibility for freedom of choice in the hands of the local engineer and manager.

Recovery of Lubricating Oil

Mr. **H. Maycock** (Holywell), dealing with 'Recovery of Lubricating Oil on Gasworks,' said when he took over control of the Holywell and Flint undertakings in January, 1946, he was rather concerned with the condition of the balance sheet, and although it was not possible to put economies into operation immediately he had of necessity to investigate when and where savings could be effected. When preparing the six-monthly statement of accounts at the end of the first half-year he was alarmed at the charge for lubricating oils used on the works and made this one of the items for immediate attention.

They had at the works two steam-driven rotary compressors, two steam-driven rotary exhausters, two Evans Wall pumps for boiler feed purposes, and one Marshall engine for operating the skip hoist. He looked round for means of economising and enquiries were sent out for an oil filter. Subsequently he purchased a Wells No. 4 oil filter complete with spare set of filter pads at a total cost of £15, which was installed in November, 1946. Oil consumption for the 12 months prior to the installation of the oil filter was 480 gal., which at 5s. per gal. incurred an expense of £120. For the ensuing 12 months this was reduced to 160 gal. at a total cost of £40, a saving of £80, or approximately 60%.

All lubricating oil recovered from the engines was now passed through the filter and re-used. Oil consumption during the past six months was 80 gal., amounting to £20. One set of filter pads at a cost of 18s. 6d. was renewed every 12 months. He strongly recommended the introduction of oil filters as a contributory factor towards reducing costs on the production side.

Open and Closed Top Gas Meters

Mr. **David Muir** (Helliwells, Ltd.) dealing with 'The Comparative Merits of Open and Closed Top Gas Meters,' said that practically from the inception of the dry gas meter the closed top pattern was the accepted design and featured an enclosed valve chamber in the meter top. In 1922, Dr. Carpenter, of the South Metropolitan Gas Company, experimented with and successfully produced what was now called an open top meter. This design eliminated the enclosed valve chamber and contained the valves, crank-top-arms, etc., in the meter top, without in any way attempting to isolate the gas from these working parts.

Controversy and speculation ensued concerning this new departure, with the result that even now the open top meter was favoured only by approximately 50% of gas undertakings.

As late as 1948, Mr. Stanley Bennet, of Alder & Mackay, Ltd., with due authority said: 'We favour the closed top meter though there are, undoubtedly, arguments for the open top. The open top design has a slight measurable effect on the absorption of the meter. The disadvantage of the open top is that the mechanism is in gas and, as the meter head acts as a condenser, it is sometimes

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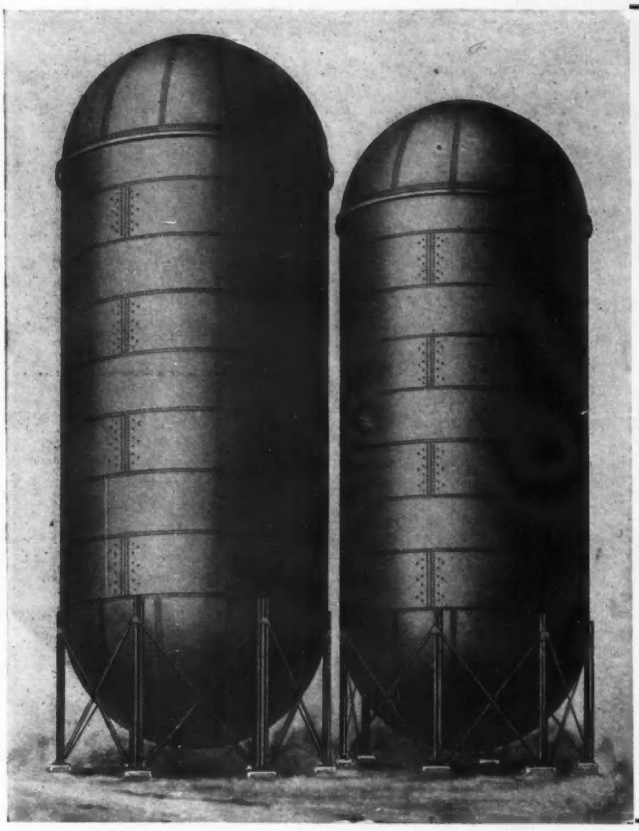

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found to be operating in wet and highly corrosive conditions. The open top meter is more difficult to calibrate, and if the consumer, by misuse, corrodes or punctures the top, a serious gas leak will result.'

Mr. A. Knight, of Birmingham undertaking, 15 years earlier, stated that the department had tried a good number of open top meters, but was up against the trouble of condensation and deposits which settled on the working parts in the top of the meter, and in many instances this was so bad as to stop the meter from working. His explanation was that there was the complete area of the top of the meter for gas to enter. The gas made a bee-line for the valves, and, in consequence, part of the gas was not circulated, and became stagnant. It was from this gas that they got the deposits that did so much damage. The larger the meter the more troubles they got.

In defence of the open top meter it was reasonable to appreciate the following points :—

(1) Improved performance in terms of low pressure loss and oscillation has been accomplished by the omission of the valve chamber and the restrictive gas way leading to it, together with the introduction of lighter packed flag rod stuffing boxes, these being permissible by virtue of the small difference in pressure between the upper and lower chambers in the open top meter. Likewise the crank stuffing box is not now required and is replaced by an index stuffing box through which passes a spindle rotating at only 1/20th of the speed encountered at the crank.

(2) Improvements in frictional losses must result in a reduction in bearing loads and stresses throughout the meter and must, therefore, be conducive to an extension of life and an improvement in reliability.

(3) Accuracy of registration in a large measure is dependent upon the frictional losses encountered throughout the meter. As the frictional losses in the open top meter are less than in the closed top, the accuracy of registration will likewise be improved.

(4) Condensation is likely to be encountered in either open or closed top meters; this fact is borne out from an extensive observation of repair work of both types. It is not uncommon to find corrosion in the top chamber of the closed top meters. This, it is thought, is due to moisture from atmosphere entering the upper chamber via the index frame when changes in temperature have taken place.

Modern practice in open top meter design called for the heavy tinning of all parts as well as bearings of stainless steel as a protective measure. Further, it was now fairly universal practice to enclose the gearing in a gear box loaded with grease which both protected the gears and permanently lubricated them. This was a considerable advantage over the gear layout of the average closed top meter.

(5) The open top construction is more convenient than the closed top for the purpose of opening for inspection and repair.

(6) The upper chamber of the open top meter is no more vulnerable than the bottom chambers of the closed top meter, and the alleged increased risks of leaks can be discounted.

There was, however, always the possibility of an explosive mixture forming in the top chamber of the closed top type of meter, due to leaking stuffing boxes, resulting in an admixture of gas and air above the valve box. The author had on one occasion seen the top of a closed top industrial meter blown off when an attempt was made to remove it with a blow-lamp instead of a soldering iron.

Mr. Stanley Armitage, of W. Parkinson & Co., in 1947, elaborated on these points and concluded that the open top meter was undoubtedly the meter of the future. Mr. Martin W. Jones, of the Ministry of Fuel and Power, in his B.I.O.S. Report No. 913, said that there was apparently universal adoption of the open top meter throughout the British zone of Germany and Berlin. Further, for many years the open top meter had been universally adopted in the London area, where it was claimed the unaccounted for gas had improved and the life of the meter had been extended. Some margin of this improvement might be due to the introduction of the small high capacity meter.

The open top meter offered considerable advantages if due care was taken of its design and construction. It offered greater scope for further improvements in valve plate design, which must be the focal point of the meter when improved performance was sought. This point was substantiated when it was considered that the design of most of the new 'Pre-cast' types of meters revolved round the open top principle. Neither an open or closed top meter would give satisfactory results if used for the measurement of dirty gases. Meter design had often been held at fault for adverse results which should properly be attributed to the conditions of the gas.

NEW PLANT AT SKINNINGROVE

THE new Skinningrove carbonising plant may be of such technical and financial benefit to the Northern Gas Board that its influence may be reflected in the next review of prices by the board. This was stated by Mr. E. Crowther, Chairman of the board, when speaking in the Zetland Hotel, Saltburn, at a luncheon held by the board prior to an inspection of the plant on August 17. Mr. Crowther made a point of congratulating the contractors, W. J. Jenkins and Co., Ltd., for completing the work in less than the contract time; and in turn, Mr. R. M. Goodman, Managing Director of Messrs. Jenkins, paid tribute to the Ministry of Fuel for the help received whenever materials were held up by 'bottlenecks.'

Mr. Crowther, members of the board, the newly-formed Middlesbrough Division Consumer Committee, representatives of the contractors and of the Press, the Mayor of Redcar (Alderman J. W. Coles), and other guests then were taken on a visit of the plant. They were shown the eight vertical chamber ovens constructed of 95% Consett silica. Each chamber oven is 15 ft. 3 in. high by 9 ft. broad, and tapers from 9½ in. wide at the top to 12¼ in. at the bottom. The thickness of the side walls is an average of 4½ in. The chambers are heated by the combustion of producer gas generated in producers built into the settings. There are four producers; one to each two chambers. Each chamber holds 2 tons 6 cwt. of coal, and this amount produces about 40,000 cu.ft. of gas.

The time which it takes to convert the coal to coke and gas varies according to chamber temperature and averages 18 hr. This means that the whole eight chambers can produce nearly 500,000 cu.ft. per day of 475 B.Th.U. gas. Steam is passed through the hot coke in the chamber during the last four hours of carbonisation. The capacity of the new plant is about three times that of the old retort house.

Eighteen hours after each chamber has been charged it is discharged by opening the bottom doors and allowing the hot coke to fall into the coke bus. The coke is then quenched by water spray. The bottom door of the chamber is secured in place again and the chamber is re-charged, a pad of breeze being dropped on to the bottom door first to protect it from the heat. The doors are made air and gas tight by water seal.

Gas is taken off both at the top and at the bottom of each chamber and is sprayed with ammoniacal liquor. The tar which condenses from the gas runs back with this liquor to a separating tank where it is deposited, and the liquor is pumped round the circuit again. After all works requirements have been met, 12 cwt. of coke is available for sale from each ton of coal carbonised. All coal, coke, and breeze for this plant is raised by skip hoist and taken by two conveyors to storage bunkers which hold a 48-hr. supply.

Value for Compensation Purposes under nationalisation of the Bath Gas Company's consolidated ordinary stock (5% basic) has been agreed between the stockholders' representative and the Ministry of Fuel and Power. Nominal outstanding amount is £427,538. Compensation will be at the rate of £124 for each £100 of stock.

The Port Talbot undertaking of the Wales Gas Board staged an attractive exhibit at the Port Talbot Agricultural Show this month—and this in spite of short notice. The undertakings' own labour and material were used in the circumstances. Though the costs of the display were small, considerable business accrued, approximately 12,000 people visiting the show during its run.

Examinations in Sales Management.—Qualifying and Final Examinations in 'Sales Management' of the Incorporated Sales Managers' Association will be held on Thursday, Friday, and Saturday, December 7, 8 and 9, 1950. For this examination, centres will be opened in London, Glasgow, and Manchester only. Entry forms are now available from the Secretary, I.S.M.A., 23, Bedford Square, London, W.C.1, and must be returned by Monday, October 30, 1950.

EXTENSIONS AT BATH*

By A. C. REA, M.I.Mech.E., M.Inst.Gas E., A.H.W.C.,
Production Engineer, Bath Sub-Division, South Western Gas Board

THE future is bound to bring about the closing down of smaller units which can be supplied in bulk from manufacturing stations where the cost of gas into holder should show considerable financial saving and from which a more consistent quality gas can be manufactured. While the trend will be in the levelling-up of the number of calorific values supplied, this is a matter which will require very careful investigation, as opposed to an arbitrary average being arrived at.

The composition, specific gravity and calorific value of gases have shown such wide variations in the past that a corolation of Wobbe indices should be studied in each subdivision before arriving at a final decision. This is a matter which principally affects the distribution and service side of the industry, but from our experience in the past at Bath in supplying varying calorific values and with widely varying proportions of carburetted water gas, up to 50% at peak loads, it has been forcibly brought to our notice that in order to give the best service to our consumers this is a matter which at first sight would appear simple in arriving at a decision, but which, in fact, requires careful investigation.

On the manufacturing side, it is possible to control the Wobbe index to within 650 to 695 with judicious proportions of horizontal and carburetted water gas, and in my own works we keep a continuous daily chart record as a guide to the probable troubles being transmitted to the distribution engineer.

Amalgamation

The advent of nationalisation has given powers for the co-ordination of supplies of gas within much wider areas than was possible under conditions prior to May 1, 1949. In the Bath area of supply, however, integration had been pursued since 1932 by the acquisition of adjacent gas companies, and this progress is illustrated in the following table.

EFFECT OF ABSORBING NEIGHBOURING UNDERTAKINGS

Undertakings	Date of acquisition	Annual sales of gas at date of acquisition Mill. cu.ft.	Present annual sales of gas (1949) Mill. cu.ft.
Chippenham ...	December 16, 1932	55	187
Corsham	December 16, 1932	10	34
Melksham	July 1, 1936	42	96
Frome	January 1, 1937	91	203
Calne	April 1, 1939	30	60
Totals		228	580

This pre-war integration, while giving a better and cheaper supply to these acquired undertakings, was also followed by a very substantial increase in local consumptions. Integration was necessarily held up during the war period, but shortly after the termination of hostilities plans were prepared for the ultimate supply of all undertakings within a reasonable geographical radius, up to approximately 25 miles. A scheme for both manufacture and distribution was therefore well advanced before vesting day and the Bath works have been planned to give an ultimate output of 20 mill. cu.ft./day.

Since vesting date the gasworks at Warminster and Westbury have been shut down and given a bulk supply from Bath. Additional undertakings visualised for bulk supply are Devizes, Trowbridge and Bradford-on-Avon, Midsomer Norton and Radstock, with a number of intervening villages.

The existing gas manufacturing plant at Bath consists of a 5 mill. cu.ft./day horizontal gas stream and a 5 mill. cu.ft./day carburetted water gas stream, all with complete and separate ancillary plants. It is, therefore, possible to have a close check on efficient working, knowing the individual makes, calorific values, and compositions of the separate gases.

The post-war extensions were scheduled to take place in three manufacturing units of 4 mill. cu.ft./day, the plant to consist of vertical retorts and the gas stream to have a complete set of ancillary plant to the holder inlet, thus pursuing the previous policy of keeping completely separate streams from different types of gas manufacturing plant.

The ground on which the new vertical plant is to be built had previously been made up to a level of 15 ft. or so above virgin ground level and in doing so a considerable amount of spent lime had been used. Extensive trial boreholes were sunk with a view to ascertaining the quality of the ground, and it was discovered that a relatively high SO_3 content existed in many parts. Piling is, of course, essential for carrying the concentrated loads of a vertical retort house.

Foundation Work

Due to the presence of SO_3 it has been decided to utilise Ciment Fondu in the manufacture of the piles in order to ensure that the cement will resist any possible attack from the SO_3. This is an aspect of foundation work which has possibly not been given a great deal of consideration in the past, but in view of the possible deterioration of ordinary Portland cement in the presence of SO_3 it is worthy of serious consideration, especially when it is evident that the failure of piles at some future date might have very serious consequences on the vertical retort bench.

Certain of the ancillary plants for the new vertical stream have been designed in 6 mill. cu.ft./day units. There will thus be two exhausters, two electrostatic detarrers, two ammonia washers, and two Connersville meters of this capacity. The other units have been designed, as in the carbonising plant, in 4 mill. cu.ft./day units—*viz.*, the condensers and purifying plant. This arrangement obviates having too large a number of small units, while still leaving a standby in the event of a breakdown. As a further safeguard the horizontal and vertical gas streams can be inter-connected.

As ground space is very limited and extends in total to only 17 acres, the purifying plant had of necessity to be designed to occupy a minimum of ground space and to conform to the shape of the available site.

While I consider it desirable in oxide purifiers to have six boxes in order to minimise the reduction in capacity when changing boxes, it was not found practicable to keep the back pressure down to a reasonable figure with this number, and therefore five reinforced concrete boxes 56 ft. × 28 ft. × 8 ft. deep carried on an overhead structure, giving a clearance of 15 ft. to allow for the operation of mechanical shovels, and with overhead revivifying floor and shed, have been adopted for the first 4 mill. extension. The oxide will be in two layers and the internal inlet and outlet boxes are such that the flow can be either upwards or downwards or central inlet or outlet. The latter provisions have been included so that for future extensions, if either wet or catalytic purifying processes are adopted, the 4 mill. cu.ft. boxes could be used as catch boxes to take 8 mill. cu.ft. per day, by adopting central inlet. They have been designed to treat gas with an H_2S content of up to 1,000 grs. and with an 'R' ratio of 30. The structure and foundations have been designed to allow the boxes to be flooded with water, this being the maximum possible loading which could be anticipated.

Very close study has been given to the type of purifying plant to be installed for the second 4 mill. extension, and with the advent of wet purification and the new dynamic oxide process it is hoped that these will prove sufficiently reliable to form the future extensions and thus further conserve ground space and reduce the amount of labour involved in emptying and re-filling boxes.

The two additional electrostatic detarrers on the vertical stream, referred to above, will be erected adjacent to the existing detarrer on the horizontal retort stream, and it has been arranged that the existing high tension electrical generat-

* From a Presidential Address to the Western Junior Gas Association.

If you operate these

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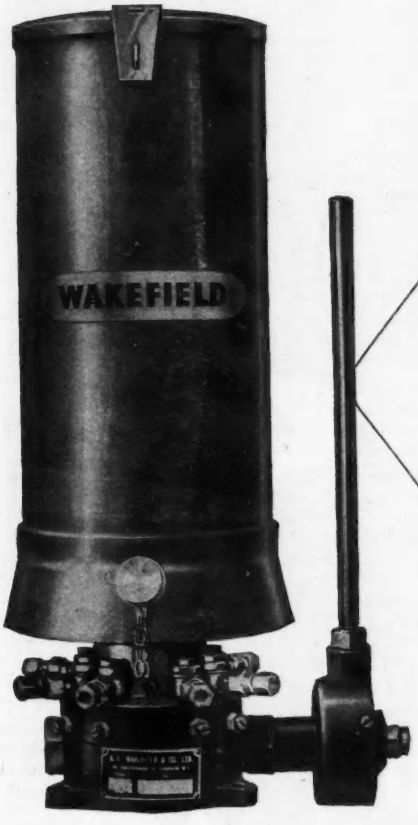

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Send for a complimentary copy of this descriptive booklet, writing your application on your business letterheading.

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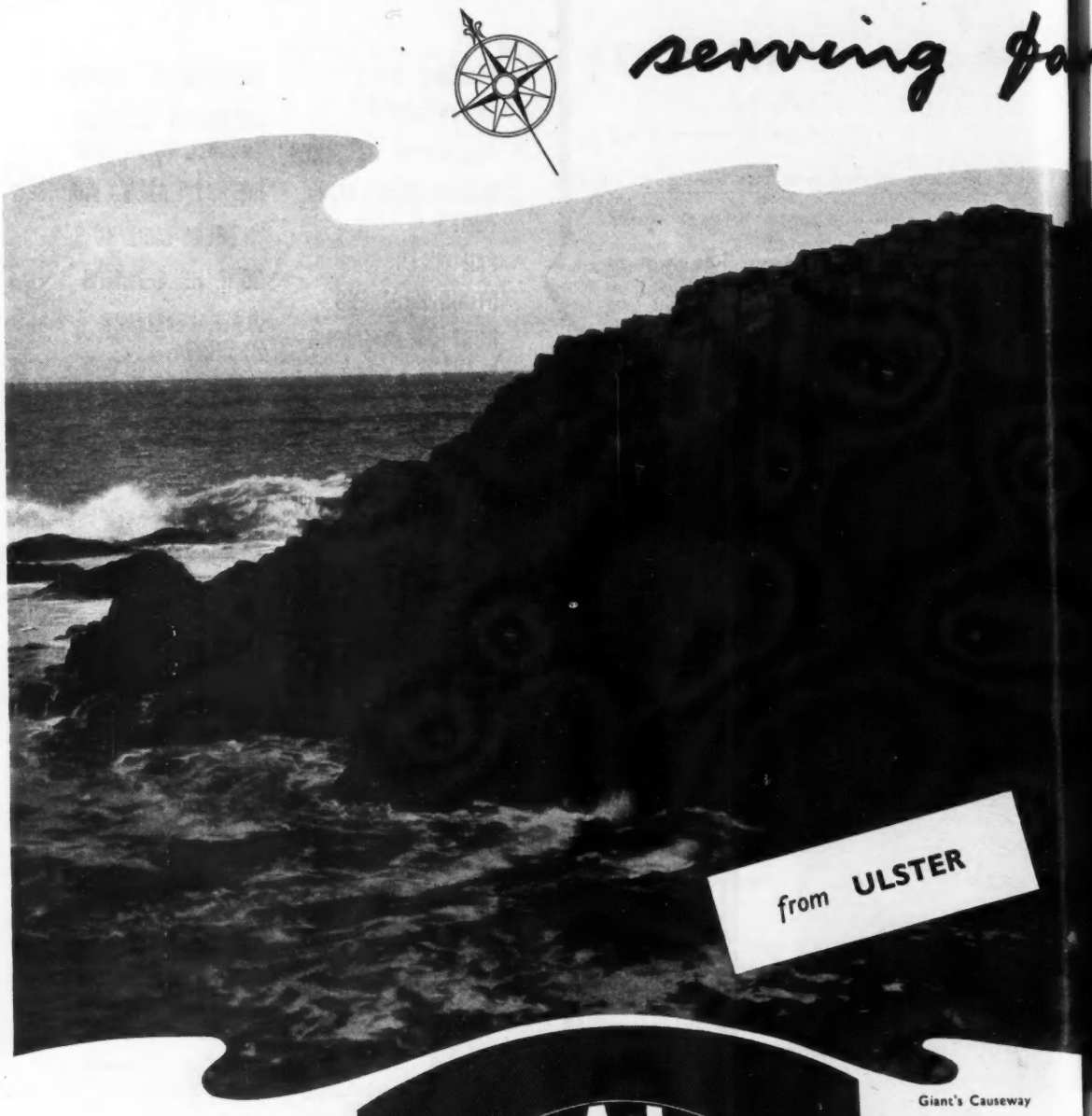
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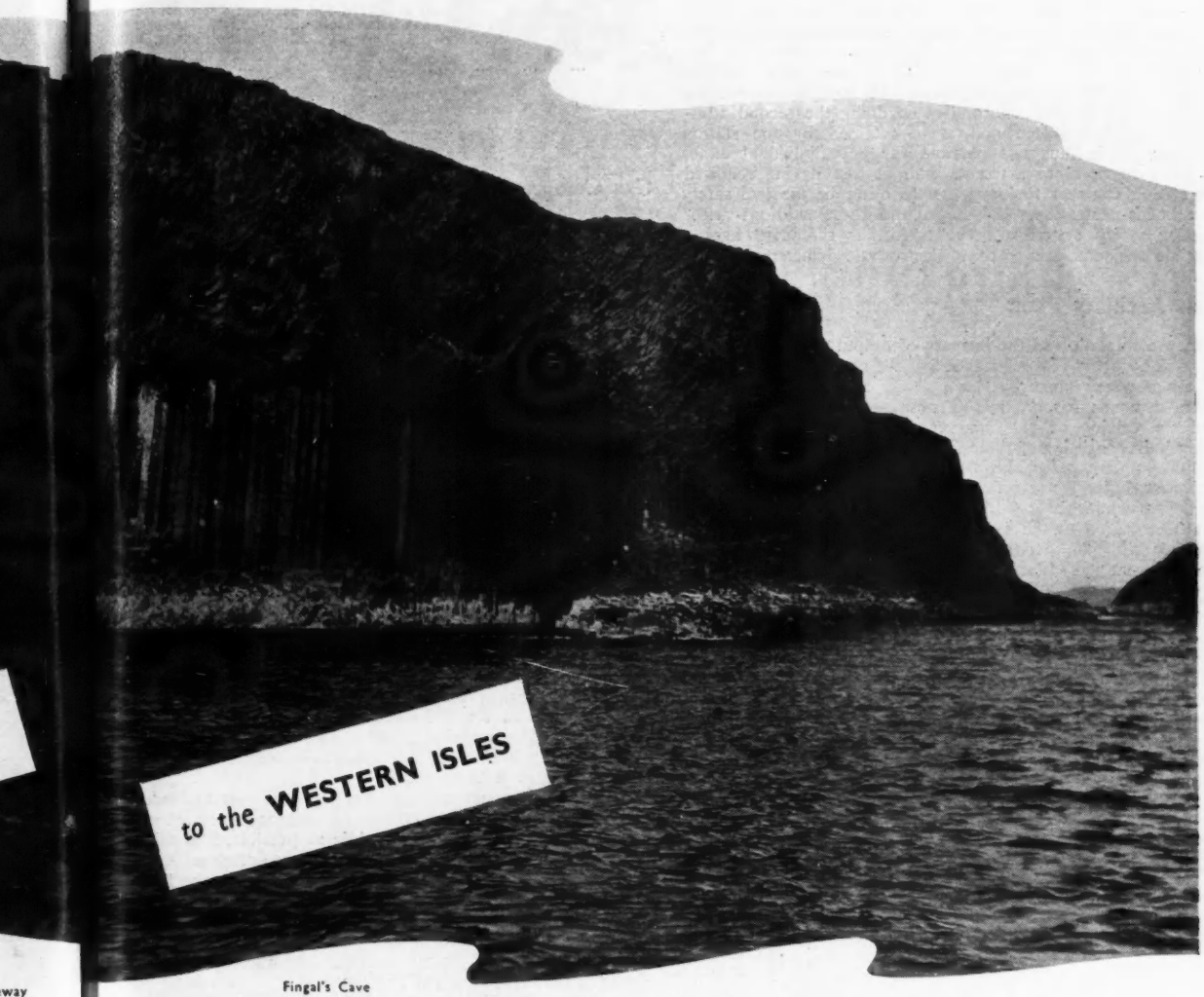

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...A. MAIN LTD · MAIN WATER HEATERS LTD.

ing set will be duplicated so that either one or the other or both of the generator sets can feed one, two, or three of the electrostatic detarrers.

Safety Scheme

A scheme of Castell key safety interlocking has been devised, in conjunction with the makers, and the additions to the normal existing systems which will be made consist of two further keys, one of which is always retained by the station engineer. It is necessary to procure this key for the opening up of any of the treaters, and in so doing the second additional key is extracted and again retained by the station engineer. It is thus not possible for any individual either to open up or close a treater without first having required the station engineer to insert one or other of the two safety keys in his possession. It is hoped that these additions to the existing safety system will be a further safeguard against possible accidents arising from electrostatic detarrers.

New Ancillary Plant

In contemplation of the increase of output from the existing 10 mill. to an ultimate 20 mill. cu.ft./day, a complete review of all gasworks plant has been made, and in order to meet steam demands for the additional manufacture of electricity and the driving of gas compressors a new boiler house is being built consisting of three 30 ft. × 9 ft. Lancashire boilers and economiser, designed to burn breeze. A new 8,000 gal./hr. activated sludge water softening plant is also under construction. An additional 300 kW steam driven electrical generator has been added to the existing installed capacity of 550 kW, together with the necessary distribution cable, switchboards, etc., to meet the ultimate electrical load of existing and new plant.

It has been the policy at Bath to be independent of the electric grid by generating all power from breeze burned in Lancashire boilers plus waste heat boilers, the steam being used to drive electric generators, gas compressors, etc.; also to electrify all continuous drives to improve the load factor, which in gasworks with so much intermittent working is very low (at Bath about 40%). Policy can usually be best justified by the costs of production and ultimate results and I give below some Bath gasworks costs for the year 1949.

WATER SOFTENING—RIVER WATER

Water softened :			
No. 1			5,522,980 gal.
Nos. 2 and 3			19,108,510 gal.
Total...			24,631,490 gal.
Reagents used :	Tons	cwt.	qr.
Lime	25	0	3
Soda	12	18	0
Alfloc		12	2
Phosphate	1	2	2
Materials :	£	s.	d.
No. 1	69	13	6
Nos. 2 and 3	231	12	0
Labour :			
No. 1	117	16	9
Nos. 2 and 3	200	8	6
	£619	10	9

Running costs	6.12d.	
Capital costs	1.74d.	
Cost of pumping to overhead tank	0.7d.	
Cost of pumping into boilers	2.46d.	
Total cost of soft water into boilers	11.02d.	per 1,000 gal.

COST OF WORKS STEAM

	Water evaporated gal.	% of total gal.	Running £	Costs Capital £	Total £
North side Lancs	5,522,980	23	7,620	572	8,192
South side Lancs	6,108,710	24	7,782	450	8,232
Waste heat	12,999,800	53	1,396	1,800	3,196
Total...	24,631,490	100	16,798	2,822	19,620
Average per 1,000 lb.			16.3d.	2.8d.	19.1d.

COST OF GENERATING ELECTRICITY

Total current generated...			1,231,050 kW.
Average load		145 kW. = 659 amp.	
Steam required at 659 amp. loading			40 lb./kW. hour
		£	s. d.
1,231,050 units × 40 × 19.1d. per 1,000 lb....		3,502	3 6
Labour :			
½ × 3½ attendants × 52 weeks at £6 12s. 1½d. per week		400	0 0
Materials and labour for repairs and maintenance		100	0 0
Lubrication		200	0 0
Total		£4,202	3 6
Running costs per kW.	0.82d.		
Capital	0.14d.		
Total cost	0.96d.	per kW./hour	

Gas Compressing

In order to transmit the additional gas which will be manufactured to the outlying districts through the existing mains one existing 300,000 cu.ft./hr. compressor which was designed for 10 lb./sq. in. has been modified on the gas compressing end to give an output of 200,000 cu.ft. at 25 lb./sq. in.

To even out the load of compressing which at the present time represents about 50% of the gas output, it is the policy to erect gasholders at the terminal end of the high pressure distribution mains. Opportunity has therefore been taken of either building new holders or enlarging existing holders by erecting the spiral guided type in existing tanks of old column guided gasholders and extending from single to three lifts.

Town and Country Planning

In most extensions and additions to plant, one comes in close contact with the town and country planning authorities. While it does not appear to have been very clearly defined whether the nationalised gas industry comes under the category of a statutory undertaking or a Government authority, it is desirable that a close working knowledge of the requirements of the Town & Country Planning Act should be acquired.

With a works situated as we are at Bath, near the centre of the city, considerable trouble has been taken to ensure that our new vertical retort house and other structures will not detract from the amenities; and in this respect many samples of brick have been examined which on erection would give a semblance to Bath stone.

There has been an ever growing realisation in the industry in recent years of the desirability of erecting structures which are as pleasing to the general public as possible, and this can in many instances be achieved without any additional expense when sufficient previous thought has been given to the finished appearance of the ultimate structure.

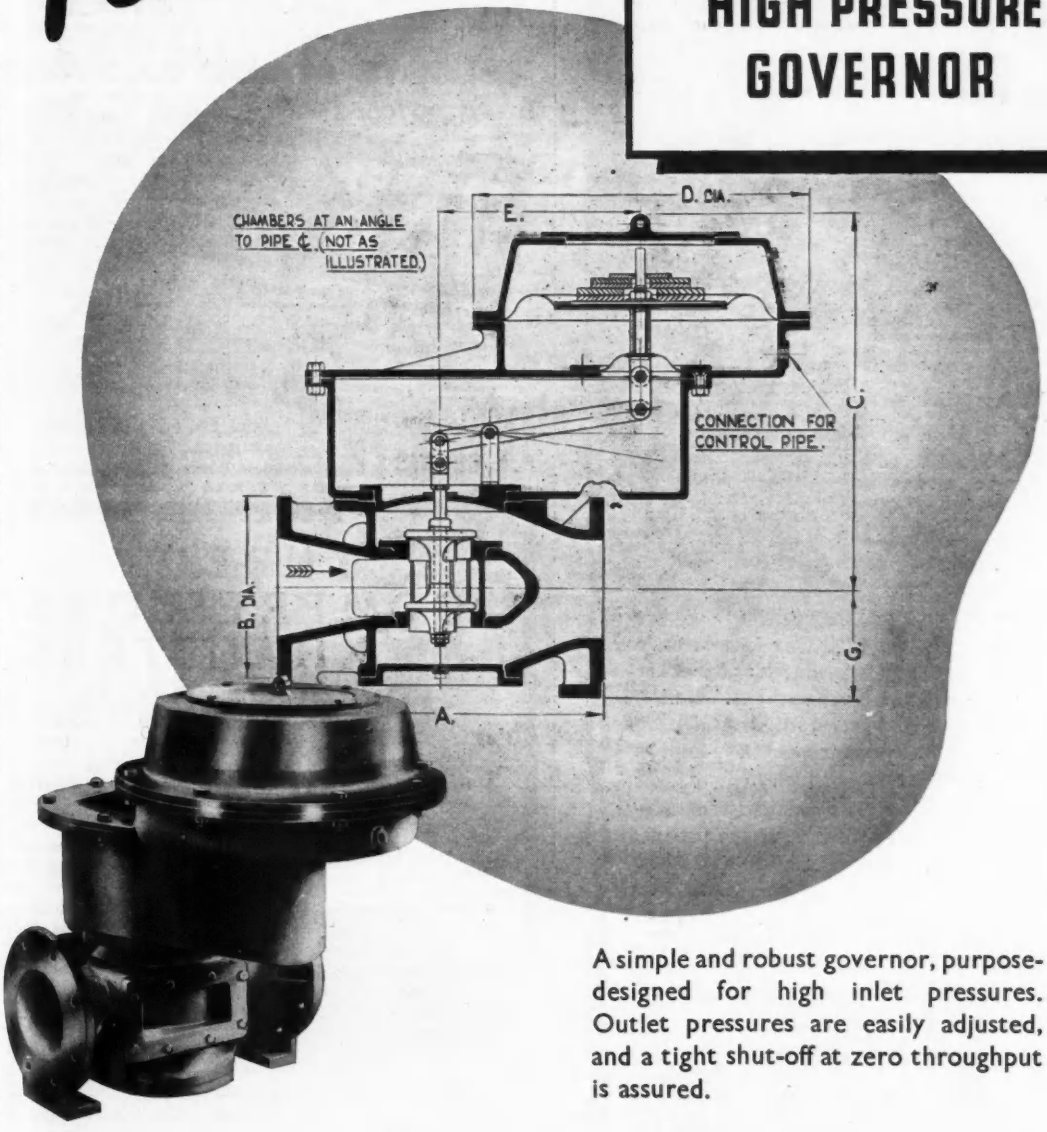
In cases of new buildings or where there is a change in the external appearance of a building—whether the building is on scheduled land or not—permission under the Town and Country Planning Act, 1947, is required from the local planning authority. Plant or machinery (as distinct from buildings) up to 50 ft. in height can be erected without permission on any existing gasworks. If the land is scheduled for gas manufacture and storage the 50 ft. limit does not apply. Gasholders do not require planning permission if the land is scheduled for gas manufacture and storage or for storage only. Where the holder or plant is bulky or conspicuous, the local planning authority can take action under Article 4 of the General Development Order and stop the development. It is therefore advisable to notify them of the intention to erect the plant or holder and obtain their concurrence. Such notification should not, however, be worded in such a way that it could be construed as an application for planning permission.

Mainlaying does not require permission under the Town and Country Planning Act, 1947, unless it involves (i) the use of governor kiosks in excess of 600 cu.ft. space, (ii) the erection or alteration of a booster house, or (iii) the laying of pipes above ground.

In the case of oxide purifiers, a decision as to whether these are classed as buildings or plant—the former, of course, requiring planning permission—depends so much upon design that it is usually settled locally.

Peebles & CO. LTD.

THE FIGURE 124
HIGH PRESSURE GOVERNOR



A simple and robust governor, purpose-designed for high inlet pressures. Outlet pressures are easily adjusted, and a tight shut-off at zero throughput is assured.

TAY WORKS, WEST BOWLING GREEN STREET, EDINBURGH, 6

Telephone Nos.: LEITH 36544 & 35069. Telegrams: "TANGENT, EDINBURGH."

100 years ago

The Progress of Chloroform

PROGRESS OF CHLOROFORM.—During the past two years the use of chloroform has been greatly extended throughout the continents of Europe and America. In Edinburgh all our surgeons are, we believe, of the constant habit of employing it. One Edinburgh dentist lately informed us that he had used chloroform in upwards of two thousand cases of teeth extraction, and in all with the happiest effects. It is stated by Mr Carmichael, surgeon in this city, that during the last two years it has been calculated that chloroform has been used in about 100,000 cases in Edinburgh and without an accident or bad effect of any kind. It may be interesting to some of our readers to know that the manufacture of chloroform has now become a matter of some importance in Edinburgh. We have been credibly informed that some manufactured in England and which has got extensively into the market for its cheapness, was found to be both very

Excerpt from "THE SCOTSMAN" Saturday, January 19, 1850.

THE fact that the capital of Scotland was the birthplace and principal centre of production of both Chloroform and the dry Gas Meter is purely coincidental.

The modern "A. & M." Meter is conclusive evidence that at no time was the Alder & Mackay Company ever affected by anaesthesia. On the contrary this virile and progressive organisation has, for the past 100 years, consistently kept in the forefront of the Meter Industry.

When one visualises the anaesthetist meticulously recording the heart beat of the patient, under chloroform, one cannot fail to appreciate the mechanical precision of the "A. & M." Meter relentlessly recording the movement of the therms and ensuring that not one is lost.

The 'A & M' METER

CELEBRATING 100 YEARS' SERVICE TO THE GAS INDUSTRY

ALDER & MACKAY, LTD., GAS METER MANUFACTURERS, EDINBURGH, BRADFORD, MANCHESTER, LONDON, BELFAST and CORK.

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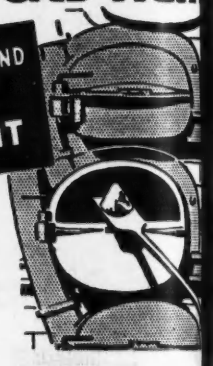
GRAPHITE PRODUCTS LTD.
LONDON, S.W.11.

RETORTS MADE GAS TIGHT
when patched with—

ONX SUPER 83 BRAND FIRE CEMENT



A recent testimonial from Gas Dept.
"We are pleased with results obtained after using ONX Super '83' Brand.
"Our settings were very bad, with large cracks in retorts, and portions of wall actually collapsed.
"Now, six months after repairing 28 retorts they appear as sound as ever; we anticipate the life of the settings will be prolonged."

A. L. CURTIS & CO., *Westmoor Works,* **CHATTERIS,** *Cambs., E*

TURBO-COMPRESSORS & EXHAUSTERS FOR AIR AND GAS.

* * *

We build a complete range of Compressors & Exhausters for air and GAS, suitable for all purposes connected with the GAS industry, including Turbo-Compressors for large capacities, as illustrated below.

WRITE FOR PAMPHLET No. 1018 GIVING PARTICULARS—

REAVELL & CO., LTD.,
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Telegrams: REAVELL, IPSWICH Telephone: 2124 & 5.

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DUTCH AND DANISH BOG ORE SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright. Highest prices paid for Spent Oxide.

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ESTABLISHED 1873

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DAYNE & FLOOD, LTD., 182, Oldham Road, Manchester, 4, Phone Col. 1393, are in a position to undertake all types CARBONIZING PLANT REPAIRS, Retort House Reconstruction, Producer Relinings, Hot and Cold Patching, Structural Steelwork Erected and Dismantled. Expert advice available.

PATENTS

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APPOINTMENTS VACANT

CORPORATION OF LIMERICK

GAS DEPARTMENT.

DISTRIBUTION SUPERINTENDENT.

APPLICATIONS are invited for the position of DISTRIBUTION SUPERINTENDENT to the above undertaking. Age limit 25 to 40.

Salary scale £550 x £20—£650, point of entry according to training and experience.

Application forms and full particulars may be obtained from the undersigned. Latest date for receiving applications 4 p.m., Monday, September 18, 1950.

F. K. THOMAS, M.INST.GAS E., City Gas Engineer.

Gasworks, Dock Road, Limerick.

EAST MIDLANDS GAS BOARD

NOTTS & DERBY DIVISION.

NEWARK UNDERTAKING.

APPOINTMENT OF SENIOR SALESMAN.

APPLICATIONS are invited from suitably qualified persons for the appointment of SENIOR SALESMAN at a commencing salary of not less than £370 per annum according to age and qualifications.

The candidate selected must be experienced in window dressing, display and promotion of the sale of gas and coke burning appliances in the showrooms and on the district, and the organisation of exhibitions, etc.

The successful applicant will be required to pass a medical examination and the appointment will be subject to such superannuation scheme as may be introduced for the Gas Industry.

Applications, stating age and giving full particulars of training, qualifications and experience, together with the names of two referees, should be addressed to the undersigned for receipt within 10 days of the appearance of this advertisement.

K. L. PEARCE, Divisional General Manager.

East Midlands Gas Board, Notts & Derby Division, Friar Gate, Derby.

EAST MIDLANDS GAS BOARD

NOTTS AND DERBY DIVISION.

LONG EATON UNDERTAKING.

APPOINTMENT OF DISTRICT MANAGER.

APPLICATIONS are invited for the position of DISTRICT MANAGER of the Long Eaton Undertaking.

Applicants should hold the Higher Grade Certificate in Gas Supply or other equivalent qualification.

The candidate selected should have had administrative experience and will be fully responsible for sales development and the organisation of sales and service staff of the undertaking. The appointment will also involve responsibility for the supervision of certain other office and distribution staffs.

Commencing salary will be £800 per annum.

The successful applicant will be required to pass a medical examination and the appointment will be subject to any superannuation scheme that may be made for the gas industry.

Applications, stating age, qualifications, present position and previous training and experience, together with the names of two referees, should be sent to the undersigned to be received not later than September 11, 1950.

A. GWYNNE DAVIES, Secretary.

Gas Offices, Beverley House, University Road, Leicester.

THE SOUTH BRISBANE GAS AND LIGHT COMPANY, LIMITED

QUEENSLAND, AUSTRALIA.

DISTRIBUTION SUPERINTENDENT.

APPLICATIONS are invited from qualified and experienced persons up to the age of 45 years to take charge of the Distribution Department of the above Company. Applicants must possess technical qualifications, practical experience and organising ability to fit them for the position. Knowledge of industrial gas equipment of advantage.

Initial salary to be at the rate of £A700 to £A800 per annum in accordance with qualifications.

Present output of company approximately 750 mill. cu.ft. per annum and rapidly expanding. Generous staff superannuation scheme in operation.

Successful applicant required to pass medical examination. From information available cost of living in Australia is approximately the same in the aggregate as in England.

No residence is provided, but the Company would give every assistance in obtaining accommodation. Company would make reasonable contribution towards removal expenses on basis of three years service.

Applications, giving full particulars of age, marital state, qualifications and experience, accompanied by references and endorsed 'Distribution Superintendent, South Brisbane, Australia,' to be addressed to Messrs. R. T. Turnbull & Co., Ltd., 29, Mincing Lane, London, E.C.3, will be received up to September 16, 1950.

W. H. SHEDDEN, General Manager and Engineer.

The South Brisbane Gas and Light Co., Ltd.

DRAUGHTSMAN with sound knowledge of gasworks and allied chemical plant design required. Age 35 or upwards. Pension scheme. Permanent position to suitable applicant.

Fullest details of experience, age and salary, to R. & J. DEMPSTER, LTD., Gas Plant Works, Manchester, 10.

SALES REPRESENTATIVE required for the South-West of England and Wales by expanding manufacturer for home laundry appliances.

Previous sales experience essential and a sound knowledge of the Gas Industry desirable.

Applications, stating age, training, experience and salary required to be addressed to J. H. Morley, Joint Managing Director, Victoria Works, Padiham, Lancs., and marked "For attention of A. A. Bishop Sales Manager, Southern Area."

A WELL-KNOWN and old-established firm of manufacturers in the Midlands has vacancies for the following sales personnel:

A. TECHNICAL SALES REPRESENTATIVE for solid fuel coke burning grates. Not over 40 years of age, and with wide experience of installation and selling methods. Should be capable of instructing and lecturing fitting staffs.

B. ASSISTANT FOR SALES OFFICE, with full experience of internal organisation, sales letter writing, systems, &c.

Applicants for the above positions should state age, previous experience, and salary required, in confidence, to No. 9925, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

NORTHERN GAS BOARD

WORKINGTON DIVISION.

APPOINTMENT OF ENGINEERING DRAUGHTSMAN.

APPLICATIONS are invited from suitably qualified persons for the post of ENGINEERING DRAUGHTSMAN at a salary of £455 rising to £495 per annum.

Candidates should be experienced in the design and construction of gas works plant and buildings, complete surveys and in the preparation of drawings and specifications.

Applications stating age, particulars of training, experience and qualifications together with *copies* of two recent Testimonials to be received by the undersigned not later than Monday, September 18, 1949.

J. G. POPE, Divisional General Manager.

Gas Works, Workington.

August 24, 1950.

NORTHERN GAS BOARD

PENRITH DIVISION.

KESWICK UNDERTAKING.

APPOINTMENT OF MANAGER.

APPLICATIONS are invited from suitably qualified persons for the post of MANAGER at the Keswick Undertaking.

The person appointed, to be responsible through the undersigned to the Divisional Management Committee, for the technical and commercial operation and control of the undertaking.

Salary £600 per annum.

Applications, stating age, qualifications and experience, together with the names of two referees, should be submitted to the undersigned not later than September 18, 1950.

A. FIELD, Divisional General Manager.

Gas Showrooms, 19, King Street, Penrith.

NORTHERN GAS BOARD

DARLINGTON DIVISION.

CENTRAL SUB-DIVISION.

SHIFT ENGINEER.

APPLICATIONS are invited for the position of SHIFT ENGINEER at the Darlington Unit of the Northern Gas Board.

Salary in accordance with the National Joint Council for Gas Staffs Agreement, Grade A.P.T. V, Provincial 'A' Scale—£385 to £465 per annum. Initial placing in accordance with experience.

Applicants must have a sound practical experience in the control and operation of vertical retorts, carburetted water gas plant and ancillary gasworks plant.

JUNIOR ENGINEER.

Applications are invited from young men with a chemical or engineering training for the position of JUNIOR ENGINEER at the Darlington Unit of the Northern Gas Board.

Salary in accordance with the National Joint Council for Gas Staffs Agreement, Grade A.P.T. IV, Provincial 'A' Scale—£250 to £420 per annum. Initial placing in accordance with experience.

The person appointed will be trained for the position of Shift Engineer.

Applications for the above vacancies, stating age, particulars of training, experience and qualifications, should be received by the undersigned, together with not more than two Testimonials, not later than September 9, 1950.

F. WILSON, Divisional General Manager.

Gas Offices, John Street, Darlington.

(Classified advertisements continued on Supplement 4)

APPOINTMENTS VACANT (ctd.)

MESSRS. HENRY BALFOUR & CO., LTD., Leven, Fife, invite applications for an appointment as TECHNICAL ASSISTANT in their gasworks plant contracting department. Knowledge of design and operation of gasworks plant essential and experience in a contractor's office would be an advantage.

Superannuation scheme in operation and good prospects of advancement.

Applications, stating age and giving full particulars of training and experience, salary required, and when available, should be addressed to the Personnel Officer.

WEST MIDLANDS GAS BOARD

WALSALL AND DISTRICT DIVISION.

SENIOR DRAUGHTSMAN.

CANNOCK GROUP OF UNDERTAKINGS.

APPLICATIONS are invited for the position of SENIOR DRAUGHTSMAN.

Applicants must be competent to prepare drawings, specifications and estimates for the design and layout of gasworks and gas distribution plant, and should have had experience in maintenance of gasworks plant and equipment.

The salary will be within the range of £520-£620 (Grade A.P.T. IX of the National Salary Scale of the National Joint Council for Gas Staffs) in accordance with qualifications and experience. The successful applicant may be required to pass a medical examination and will be subject to such superannuation regulations as the Board may, in due course, adopt.

Applications, stating particulars of age, education, qualifications and experience, together with the names of two referees, should be addressed to Mr. E. Hardiker, Divisional Manager, West Midlands Gas Board, Walsall and District Division, Walsall Factory Estate, Tame Bridge, West Bromwich Road, Walsall, to reach him not later than 14 days after the appearance of this advertisement. Applicants are requested to quote reference T.P.3 when replying to this advertisement.

F. H. CURETON,
Secretary.

WEST MIDLANDS GAS BOARD

WALSALL AND DISTRICT DIVISION.

SALES AND SERVICE SUPERINTENDENT.

WALSALL UNDERTAKING.

APPLICATIONS are invited from qualified persons for the above position.

The successful candidate will be responsible to the District Manager for the sale of appliances and general service to consumers, and must be fully experienced in the development of sales and installation and maintenance of appliances and equipment, &c.

The salary will be within the range of £570-£670 (Grade A.P.T. X of the National Salary Scale of the National Joint Council for Gas Staffs) in accordance with qualifications and experience. The successful candidate may be required to pass a medical examination and will be subject to such superannuation regulations as the Board may, in due course, adopt.

Applications, stating age, qualifications and experience, and giving the names of two referees, should be addressed to Mr. E. Hardiker, Divisional Manager, West Midlands Gas Board, Walsall and District Division, Walsall Factory Estate, Tame Bridge, West Bromwich Road, Walsall, to reach him not later than 14 days after the appearance of this advertisement. Applicants are requested to quote reference T.P.3 when replying to this advertisement.

F. H. CURETON,
Secretary.

WEST MIDLANDS GAS BOARD

WALSALL AND DISTRICT DIVISION.

OLDBURY DISTRICT.

PRODUCTION SUPERINTENDENT.

APPLICATIONS are invited from suitably qualified persons for the above appointment.

Applicants must have experience in the production of gas from continuous vertical retorts and carburetted water gas plants and be capable of controlling personnel employed in such operations.

The salary will be within the range of £450-£530 (Grade A.P.T. VII of the National Salary Scale of the National Joint Council for Gas Staffs) in accordance with qualifications and experience. The successful candidate will be subject to such superannuation regulations as the Board may, in due course, adopt, and may be required to pass a medical examination.

Applications, stating particulars of age, education, training, qualifications and experience and giving the names of two referees, should be addressed to Mr. E. Hardiker, Divisional Manager, West Midlands Gas Board, Walsall and District Division, Walsall Factory Estate, Tame Bridge, West Bromwich Road, Walsall, to reach him not later than 14 days after the appearance of this advertisement. Applicants are requested to quote reference T.P.3 when replying to this advertisement.

F. H. CURETON,
Secretary.

WEST MIDLANDS GAS BOARD

WOLVERHAMPTON AND DISTRICT DIVISION.

STOURBRIDGE DISTRICT—TECHNICAL ASSISTANT.

APPLICATIONS are invited from suitably qualified persons for the above post.

The successful candidate will be required to have experience of general Gas Works routine testing, including Retort House pyrometry. Experience in the control of Vertical Retort Settings would be an advantage.

The salary will be £390 per annum, rising by annual increments of £15 to £435 per annum. The successful candidate will be subject to such superannuation regulations as the Board may, in due course, adopt, but any existing superannuation rights in the Gas Industry will be maintained.

Applications, stating age, qualifications and experience together with details of present and previous appointments and the names of two referees should be addressed to Mr. F. C. Briggs, Divisional Manager, West Midlands Gas Board, Gas Offices, Bath Street, Dudley, Worcs., to reach him not later than fourteen days after the publication of this advertisement.

Applicants are requested to quote Ref. T.P.3, when replying to this advertisement.

F. H. CURETON,
Secretary.

WEST MIDLANDS GAS BOARD

WARWICKSHIRE DIVISION.
DIVISIONAL DOMESTIC SALES AND SERVICE SUPERINTENDENT.

APPLICATIONS are invited from suitably qualified persons for the above position with Headquarters Office at Coventry.

Candidates should be thoroughly experienced in all matters connected with Sales, Showrooms, Publicity, Exhibitions, and the fitting and servicing of Domestic Gas Appliances.

The commencing salary will be within the range £645—£770 per annum, in accordance with Grade A.P.T.12 Provincial "A" of the Salary Scales of the National Joint Council for Gas Staffs.

The appointment will be subject to the provisions of such a superannuation scheme as the Board may, in due course, adopt, and the successful candidate may be required to pass a medical examination.

Applications, giving details of age, qualifications and experience together with the names of two referees, should be addressed to Mr. A. Allen, Divisional Manager, West Midlands Gas Board, Warwickshire Division, Gas Street, Coventry, to reach him not later than fourteen days after the appearance of this advertisement.

Applicants are requested to quote Ref. T.P.3 when replying to this advertisement.

F. H. CURETON,
Secretary.

WEST MIDLANDS GAS BOARD

WOLVERHAMPTON & DISTRICT DIVISION.
WILLENHALL DISTRICT—DISTRICT SUPERINTENDENT.

APPLICATIONS are invited from suitably qualified persons for the above position.

Candidates must have a sound knowledge of domestic appliances, gas fitting, showroom work, and consumer service generally, preferably some experience of industrial gas usage and public lighting. Knowledge of mains repairs and service laying would be advantageous.

The salary will be £450 per annum, rising by increments of £20 to £530 per annum. The successful candidate will be subject to such superannuation regulations as the Board may, in due course, adopt, but any existing superannuation rights in the Gas Industry will be maintained.

Applications, stating age, qualifications and experience, together with details of present and previous appointments and the names of two referees, should be addressed to Mr. F. C. Briggs, Divisional Manager, West Midlands Gas Board, Gas Offices, Bath Street, Dudley, to reach him not later than fourteen days after the publication of this advertisement.

Applicants are requested to quote Ref. T.P.3, when replying to this advertisement.

F. H. CURETON,
Secretary.

SCOTTISH GAS BOARD

DUNDEE GROUP.
DUNDEE DISTRICT.
JUNIOR CHEMIST.

APPLICATIONS are invited for the position of JUNIOR CHEMIST to the Dundee District.

Applicants should have experience in the carrying out of all Gas Works routine tests, and should possess the Ordinary Grade Certificate of the Institution of Gas Engineers (Manufacture) or equivalent qualification.

The salary will be £390 per annum, rising by £15 increments to £435 per annum.

The successful candidate will require to pass a medical examination in anticipation of any superannuation scheme that may come into operation in the future.

Applications, stating age, present occupation, experience and qualifications, should reach the undersigned not later than Monday, September 18, 1950.

W. S. JOHNSTON, B.SC., M.INST.GAS E., M.INST.F.,
Scottish Gas Board, Group Manager.
Dundee Group,
Gas Works,
East Dock Street,
Dundee.

SCOTTISH GAS BOARD

EDINBURGH AND SOUTH EASTERN DIVISION.

EDINBURGH GROUP.

EDINBURGH UNDERTAKING.

DRAUGHTSMAN-TECHNICAL ASSISTANT.

APPLICATIONS are invited for the position of DRAUGHTSMAN - TECHNICAL ASSISTANT in the drawing office at the Granton Works of the Edinburgh Undertaking.

Candidates must be capable of preparing specifications and drawings for gasworks plant and structures, and of supervising and directing the construction and erection work carried out by the Scottish Gas Board and by plant contractors. Candidates are required to possess the Higher Grade Examination Certificate in Gas Manufacture or an equivalent qualification of the Institutions of Mechanical, Civil or Structural Engineers.

Salary scale £450-£530 per annum, and placing on the scale will depend upon qualifications and experience.

The successful candidate may be required to carry out similar functions for other undertakings in the Edinburgh Group. He will be required to pass a medical examination and will be subject to the provision of any superannuation scheme which the Board may introduce.

The question of housing accommodation will be discussed with the applicant at the interview.

Applications, stating age, training, qualifications and experience, accompanied by *copies* of not more than three Testimonials, should be made to the undersigned not later than first post on Wednesday, September 20, 1950.

DAVID BEAVIS,
Group Manager.
15, Calton Hill,
Edinburgh.

WALES GAS BOARD

SWANSEA UNDERTAKING.

APPLICATIONS are invited for the appointment of DEPUTY ENGINEER AND MANAGER to the Swansea Undertaking. Applicants must have had experience in the management and administration of a gas undertaking in addition to possessing a thorough knowledge of modern manufacturing and distribution practice.

The possession as a minimum of the Higher Grade Gas Engineering Certificate of the Institution of Gas Engineers (Manufacture), or its equivalent, will be a necessary qualification. Similar professional attainments in Gas Supply will be an added qualification.

The commencing salary will be within the range of £900 to £1,000 per annum. The Board would be prepared to pay the higher figure mentioned as the commencing salary to a suitable applicant.

Applications, giving details of age, qualifications, experience, and present position, should be submitted together with the names of two referees, to E. Ablett, O.B.E., Engineer, Manager and Secretary, Wales Gas Board, Swansea Undertaking, Gas Offices, Oystermouth Road, Swansea, not later than September 16, 1950.

CONTRACTS OPEN

GASHOLDERS FOR AUSTRALIAN GAS LIGHT COMPANY, SYDNEY.

FIRMS interested in quoting for the three SPIRALLY-GUIDED GASHOLDERS, each of 4,000,000 cu.ft. capacity, required by the above undertaking are notified that tenders will now be received by William Coward & Co., Ltd., 3, St. James's Square, London, up to 12 noon on Friday, October 6, 1950.

PLANT FOR SALE

FOR SALE. Barnard SINGLE ROPE RING DISCHARGE GRAB. Capacity 57/47 cu.ft.

Apply South Eastern Gas Board, Stores Department, 709, Old Kent Road, London, S.E.15.

FOR SALE. LOW PRESSURE COMPRESSOR by Whittaker Hall, 726 c.f.m., 5 lb. pressure with 24 h.p. L.D.C. motor, unloader and relief valve.

One hundred and fifty 4 in. cast iron FLANGED PIPES, 9 ft. long. Practically new.

HIGH PRESSURE GAS RECEIVER, 30 ft. by 8 ft. for 80 lb.

Ditto, 28 ft. by 8 ft. for 80 lb.

CLECKHEATON ENGINEERING AND MOTOR CO., LTD., Cleckheaton, Yorks.

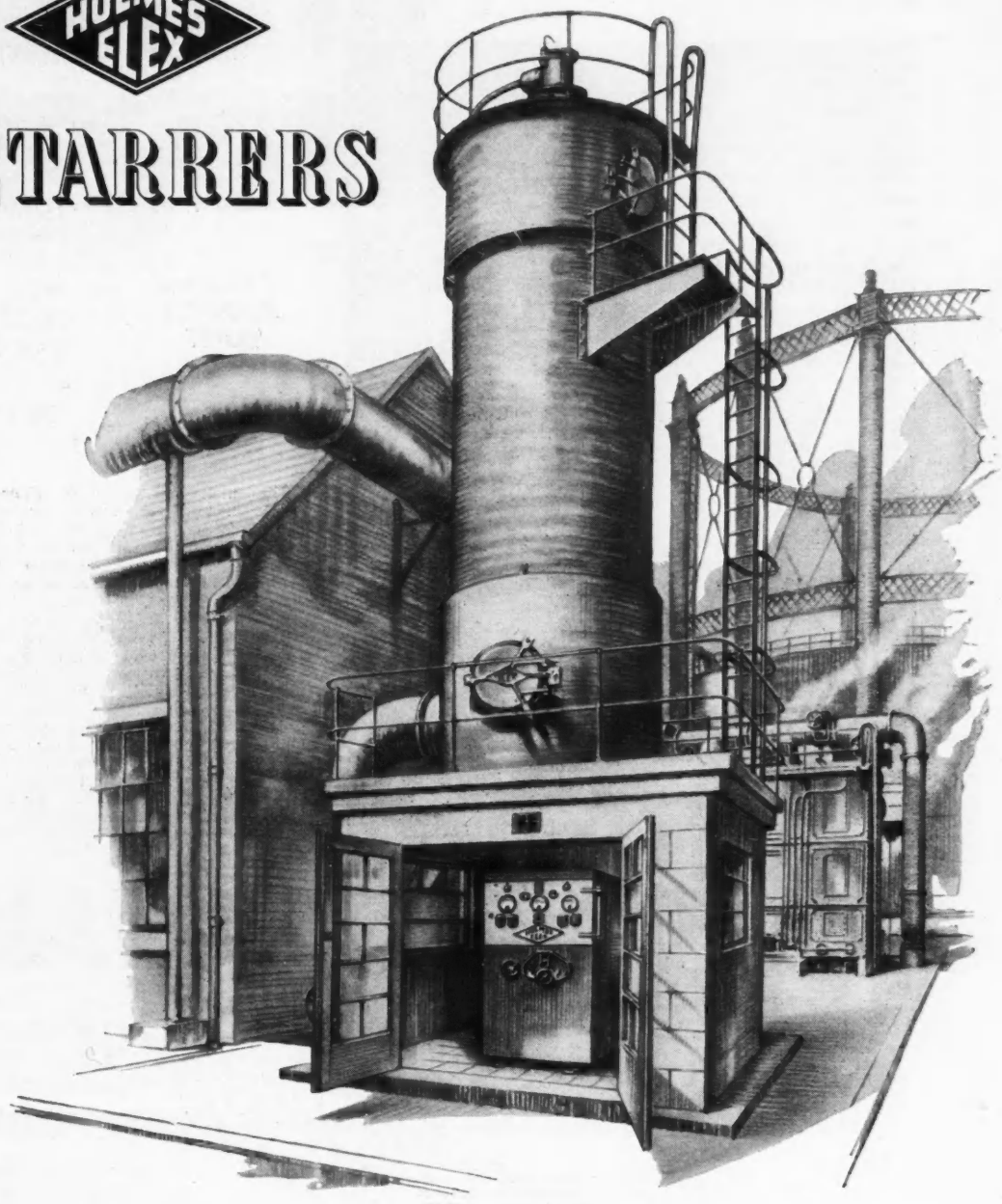
BUSINESS OPPORTUNITIES

GROUP seeking fuller employment of light engineering capacity capable quality mass-all individual production would consider acquisition established and profitable undertaking having annual turnover not less than £50,000. Arrangement with design or sales concern without manufacturing facilities might also suit.

Write Box S.917, Willings, 362, Gray's Inn Road, London, W.C.1.

HOLMES ELEX

DETARRERS



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HOLMES CENTENARY YEAR 1950

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VENTILATION — HEATING

GAS BOOSTING and EXHAUSTING — MECHANICAL DRAUGHT

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MAN-COOLING — DRYING

WE make all types of Fans—"High Efficiency" for boosting or exhausting gas up to 3 lbs. p.s.i. and for volumes from 5,000 to 1,500,000 cfph; Cast Iron and Steel-plate "Pressure" fans for up to 2 lbs. p.s.i. air blast to furnaces, forges, water gas plants, burner equipment, etc; "Turbo" fans for applications requiring up to 6 lbs. p.s.i.; "Centrifugal" fans for draught on boiler fires to ensure economical steam production, or for cold air douche to workers in retort houses, etc.; "Centrifugal" or "Axial" fans for supplying ventilating air through ductwork; "Propeller" fans for moving air in volume for ventilating; "Propeller" fans on portable structures for cooling workers at furnace fronts; and "Tenaxe" fans for re-circulating high temperature gases and air in various types of heat treatment furnaces.

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FANS *for every purpose*

for which fans are essential.

When you need Fans for an opportunity of making moving air or gas give us **practical suggestions.**

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MANCHESTER, 4: 26 Corporation Street. Tel. No.: Blackfriars 4228. BIRMINGHAM, 2: 75 New Street. Tel. No.: Midland 0317-8.
LEEDS, 1: 40/41 Royal Exchange Chambers. TN: Leeds 27286. NEWCASTLE-ON-TYNE 1: 21 Mosley St. TN: Newcastle 22284.
SCOTLAND: 90 Mitchell Street, Glasgow, C1. TN: Central 7973. IRELAND: 7 Brunswick St. Belfast. TN: Belfast 21114.
SOUTH WALES: 127 Stanwell Road, Penarth, nr. Cardiff. TN: Penarth 249.

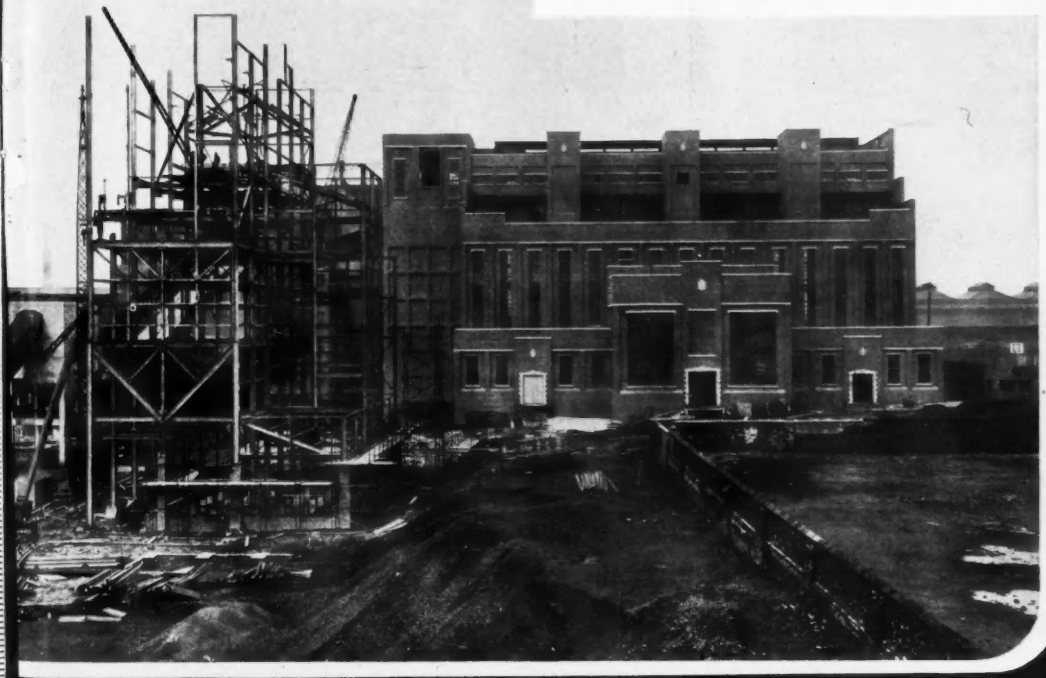
Printed by STRAKER BROTHERS LTD., E.C.2, for WALTER KING, LIMITED, 11, BOLT COURT FLEET STREET, LONDON, E.C.4. Wednesday, August 30, 1950.

Work in progress

SALFORD
WEST EGERTON STREET

The new Glover-West Retort House with the Coke Plant Steelwork in the foreground.

[Photo by Entwistle, Thorpe & Co., Ltd



West's Gas
IMPROVEMENT CO., LTD.
MILES PLATTING, MANCHESTER, 10

Telephone: COLlyhurst 2961-5. Telegrams: Stoker, Manchester.

Office: COLUMBIA HOUSE, ALDWYCH, W.C.2. Telephone: HOLborn 4108-9. Telegrams: Wesgasco, Estrand.

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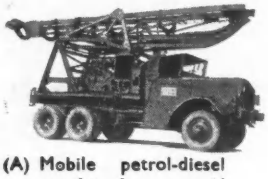
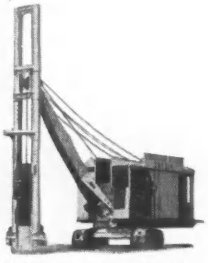
PROVIDES SECURE FOUNDATIONS FOR ANY STRUCTURE

PLANT FOR DRIVING OUR SPECIALISED SYSTEM OF PILING



(A) Mobile petrol-diesel outfit for small contracts.
2-ton Drop Hammer.

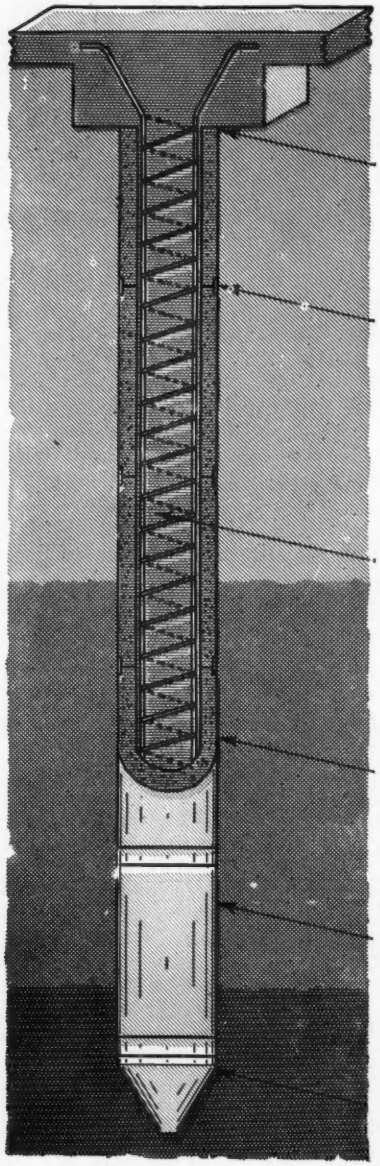


(B) Medium mobile diesel outfit for undulating sites.
3-ton Drop Hammer.

(C) Large mobile diesel outfit for undulating sites.
3-ton Drop Hammer.

(D) Typical steam frame for extensive sites.
4-ton Steam Hammer.

(E) Large mobile diesel outfit for undulating sites.
3-4 ton Drop Hammer.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SKIN FRICTION RETAINED AS INITIAL SET IS NOT DISTURBED
SOLID CONCRETE SHOE TAKES DRIVING STRESS AND PENETRATES INTO LOAD BEARING STRATA

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Northern Office: Albion Ironworks, Manchester 10. Telephone: Collyhurst 2961. *Scottish Office:* 103, West Regent Street, Glasgow, C.2. Telephone: Douglas 254